

Running Head: DIGITAL CONVERSION AND PROFESSIONAL LEARNING

AN ONLINE COMMUNITY OF INQUIRY TO PROMOTE PROFESSIONAL  
LEARNING IN A DIGITAL CONVERSION INITIATIVE

by  
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# DIGITAL CONVERSION AND PROFESSIONAL LEARNING

## Abstract

A school district in Maryland is embarking on a digital conversion initiative to transition learning from a paper-based approach to a digital approach where teachers integrate mobile devices, digital curriculum accessed through a learning management system, and digital content to enhance instruction. These significant shifts will require extensive professional development, yet there are limited opportunities to engage teachers in face to face professional development and provide continued opportunities for ongoing conversation, questions, and support. The purpose of this research study was to investigate the manner in which online professional development can support the professional learning of teachers as they implement digital practices in the classroom and the factors that contribute to the application of professional learning to classroom practice. An online Community of Inquiry will be framed and designed to provide a sustained, collaborative, and authentic professional learning opportunity for English 10 teachers to assist them in dealing with the ill-structured problems that they will encounter as they implement a digital conversion. The Community of Inquiry framework with cognitive presence as its focal point, measured through the Practical Inquiry Model, requires at its highest level, resolution to a problem. This qualitative research study collected and analyzed descriptive data from the online community, interviews with teachers, and classroom visits in order to construct a picture of professional development designed to support a digital conversion initiative. This study suggests that an online professional learning community has the potential of facilitating collaborative thinking, application of new strategies, and reflection on student learning. This potential is dependent on the teachers' ability to overcome time constraints and participate in an online community that has been structured around an authentic problem and scaffolding

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discussions to require goal setting, evidence of application, and reflection on the impact of classroom application.

*Keywords:* authentic problem, classroom application, cognitive presence, Community of Inquiry, digital conversion, online professional development, Practical Inquiry Model

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## Chapter 1: Introduction

The digital conversion of classroom practice involves teachers meaningfully integrating technology in the classroom to influence student achievement. Teacher professional development, defined as a “a comprehensive, sustained, and intensive approach to improving teachers’ and principals’ effectiveness in raising student achievement” is a critical feature of the success of shifting practices to include digital tools and practices (Birkerhoff, 2006; Cifuentes, Maxwell, & Bulu, 2011; Mouza; 2006; Slabine, 2011, p. i). Despite the focus on professional development as sustained, intensive, collaborative, job-embedded, and classroom focused activities that are an integral part of school strategy for providing educators with the knowledge and skills necessary to enable students to meet academic standards, isolated workshops remain a common professional development structure, with teachers passively listening to experts concerning topics that do not influence their teaching (Boyle, While, & Boyle, 2004; Crow, 2015). Applying the sociocultural theory, situated learning theory, and constructivism theory, professional development must engage learners as they work together in authentic, social situations to construct meaning using tools, resources, and technologies that are specific to solving problems in the teaching profession.

### **Professional Development**

Traditional and reform professional development are formats of professional development identified in two seminal studies on teacher professional development (Garet, Porter, Desimone, Birman, & Yoon, 2001; Phillips, 2003). Traditional formats refer to workshops, institutes, and conferences occurring outside of the teacher’s day delivered through a person identified as an expert. Reform professional development

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activities, found to have a greater impact on teacher professional learning, are organizational structures that take the form of professional learning communities, mentoring or study groups, with direct application to classroom practice, occurring during the school day, and sustained over time (Garet et al., 2001; Phillips, 2003). Sustaining the duration of professional development is a significant component to reform professional development as it provides opportunities for ongoing learning opportunities around the curriculum, students, and teaching (Ball & Cohen, 1999; Garet et al., 2001; Penuel, Fishman, Yamaguchi, & Gallagher, 2007). Also characteristic of reform professional development and reported as having the largest effect on the change of teaching practice as self-reported by teachers is a focus on the integration of subject matter content with instructional strategy reflecting everyday practices (Garet et al., 2001). Providing collaborative experiences is also a critical characteristic of reform professional development (Desimone, Porter, Garet, Yoon, & Birman, 2002; Garet et al., 2001; Hew & Hara, 2007; Penuel et al., 2007; Williams, 2013). Although schools historically have been structured so that teachers work alone, professional development is transitioning to a collaborative approach through professional learning communities as teachers share instructional practices, pool resources, plan lessons, assess students, and expand their understanding of teaching methods (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Hargreaves, 2000). Collective groups of teachers discussing practice has been suggested as the core of professional development as well as critical to student achievement (Desimone et al., 2002; Garet et al., 2001; Hew and Hara, 2007; Penuel et al., 2007; Williams, 2013).

### **Online Professional Development**

With the expansion of the Internet and the potential for online learning, teachers are also opting to be involved in online professional development. Online tools have the capability of facilitating the connection of teachers as they are engaged in learning communities (Nielsen, Barry, & Addison, 2007; Phillips, 2003). The Internet provides teachers with opportunities to collaborate with other teachers and experts outside their schools, providing social spaces for interaction, learning and the access of knowledge and resources (Duncan-Howell, 2010). Perceptions, teacher knowledge, and instructional practices can be improved as a result of participation in online professional development (Fishman et al., 2013; Russell, Carey, Kleiman, & Venable, 2009). The collaboration that is found in an online learning community has the potential to support the teacher emotionally as well as instructionally. Online communities have been found to reduce feelings of disconnectedness, isolation, that many teachers experience (Duncan-Howell, 2010)

### **Professional Development to Support Technology Integration**

When used to support technology integration, online professional development has the potential to fit a teacher's schedule, pull from resources not available locally, and provide ongoing, job-embedded support (Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2009). Online professional development has the potential of facilitating communication and collaboration as well as providing connections to authentic practices (Ching & Hursch, 2014; Chitanana, 2012; Rienties, Brouwer, & Lygo-Baker, 2013; Vavasseur & MacGregor, 2008). Online professional development has the potential to support and sustain the significant number of training hours necessary which has been



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found to be a strong predictor of the use of technology as cognitive tools for knowledge construction rather than simply using technology for drill and practice and searching.

(Hsu & Kuan, 2013; Mueller, Wood, Willoughby, Ross, & Specht, 2008; Wang, 2014).

Pedagogical knowledge, content knowledge, and technology knowledge must be integrated in professional development that focuses on transformation of a traditional classroom to one that integrates technology (Ching, 2014; McGrail, 2007; Eteokleous, 2008, Rienties et al., 2013). Teachers participating in online professional development which used a model to integrate content, pedagogy, and technology knowledge were found to be likely to use technology and confident in their abilities to integrate technology within their pedagogy and content area (Rienties et al., 2013).

### **Statement of the Problem**

A school district in Maryland is embarking on a digital conversion initiative to transition learning from a paper-based approach of learning to a digital approach where all students and teachers have access to devices and anytime access to the Internet. For teachers, this will involve accessing digital curriculum and delivering instruction through a learning management system (LMS), integrating mobile tablet devices into teaching and learning, and utilizing digital content to enhance the curriculum. These significant shifts will require extensive professional development, yet there are limited opportunities to engage teachers in face to face professional development and provide continued opportunities for ongoing conversation, questions, and support as teachers implement new devices and a digital curriculum.

### **Statement of Purpose**

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The purpose of this qualitative research study was to investigate the impact of professional development structured as an online Community of Inquiry on the application of professional learning to practice. Participants in this study were English 10 teachers who were guided through the Practical Inquiry Model in seven, two week modules. The descriptive data collected from the natural setting of the (a) online community, (b) interviews with teachers, and (c) classroom visits focused in order to construct a picture of professional development designed to support a digital conversion initiative (Bogdan & Bilken, 2007). A qualitative approach to this study has provided the opportunity to examine the teacher's own attitudes and motivations in combination with their behavior and provide a framework to make sense of the teacher's experience and choices (Hakim, 1987). This is in contrast to previous studies examining online professional development through the lens of self-reflection surveys or through discussion board content analysis based on the relationship between the specific indicators of cognitive, teacher, and social presence in an online Community of Inquiry. This study will use the teachers own experiences and reflections to explore the ways in which online professional development supports the professional learning of teachers as well as the factors in the online community which impact the transfer of professional learning to classroom practice.

This study will address the following research questions: (a) In what ways does an online Community of Inquiry support the professional learning of teachers as they implement digital practices in the classroom?; and (b) What are the factors in an online Community of Inquiry that contribute to a teacher's application of professional learning to classroom practice?

### **Significance of the Study**

Technology plays a significant role in our society and the impact on schools is increasing. The U.S. Department of Education (2016) through The National Education Technology Plan emphasizes that when “carefully designed and thoughtfully applied, technology can accelerate, amplify, and expand the impact of effective practices” (p. 3). (p. 3). This plan suggested that the conversation is shifting from whether technology should be used in learning to how it should be used to ensure high quality learning experiences. Project Tomorrow (2015) proposed that the focus in instructional technology has included districts searching for a silver bullet in a technology device, but that the transformation of the learning environments is dependent on a strategic planning process that examines the combination of student achievement with the intentional use of digital tools. In this same report, students reinforce the need for the transformation of classrooms to learning environments where (a) they have more control over the learning process; (b) learning is relevant; and (c) a wide range of digital tools, resources and content are utilized (Project Tomorrow, 2015).

As this school district moves from this first digital conversion effort of English 10 to the transformation through digital tools of all curricular areas, professional development will play a critical role in this significant shift to classroom practice and pedagogy. Without changing professional development district structures, online professional development has the potential to provide collaborative, sustained professional development that emphasizes the interaction between technology, content, and pedagogy by providing authentic and practical learning experiences. This study will

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provide insight to district leaders regarding ways in which online professional development can support teachers making this significant pedagogical shift.

### Chapter 2: A Review of the Literature on the Structure and Content of Professional Development and its Impact on a Digital Conversion Initiative

Although “technology continues to profoundly affect the way we work, collaborate, communicate, and succeed,” the students in the Maryland district have been minimally impacted by these technologies (Johnson, Smith, Levine, & Haywood, 2010, p. 4). The district is embracing the idea that technology can have a great impact on teaching and learning and is beginning a digital conversion initiative where digital tools are used to enhance learning. Digital conversion, defined by Edwards (2013) as the “transformation of instruction from a paper-based world to a primary digital world, in which every student and teacher has access to a personal computing device and the Internet anytime/anywhere” (p. 2) is being adopted.

English 10 teachers and students will be the first to experience digital conversion in this Maryland district. This initiative has been funded through a Digital Learning Innovation Grant provided through the Maryland Governor’s Office. With grant funding and support through the Office of Technology and the Office of English Language Arts, (a) a tablet device will be provided for each teacher, (b) student tablets will be funded at a ratio of one tablet for every nine students, (c) face-to-face professional development days will be funded, and (d) a digital interactive textbook will be purchased for each student and teacher. With these resources available, the goal is that each English teacher will access digital curriculum and deliver instruction through a LMS, integrate mobile tablet devices into teaching and learning, and utilize digital content to enhance the curriculum.

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These significant shifts in instruction will require extensive professional development, yet there are limited opportunities to engage teachers in face-to-face professional development and provide continued opportunities for ongoing conversation, questions, and support as teachers implement new devices and a digital curriculum.

### **Organizational Context**

Driven by the needs around the online Partnership for Assessment of Readiness for College and Careers (PARCC) assessment, the district in Maryland has formed a committee to define a vision, mission, and recommended plan for digital conversion, which focuses on integrating technology seamlessly throughout all instruction and operations. Although this committee has established a vision and mission statement to inspire the district to “learn and lead in a digital world” by “creating active and dynamic learning environments using cutting-edge, on-demand content and seamless access to digital tools,” funding for digital technology devices is severely limited. With this limited funding for hardware, the Maryland district is placing its emphasis in adopting and building a curriculum and learning management system, through a product called *itslearning*. *Itslearning* was selected as the curriculum and learning management system as it provides a framework to write and disseminate digital curriculum to teachers and digital content to students. It is a strong digital curriculum developed in *itslearning* in conjunction with a comprehensive professional development program that will bring about digital transformation in the classrooms of this Maryland district.

Although professional development is recognized as critically important in transforming classrooms in the district, opportunities for professional development are limited. There are limited days in the master calendar designated for professional

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development resulting in the professional development around digital conversion occurring during the school day as teachers' classrooms are taught by substitute teachers. This is problematic as funds to support substitute teachers are limited and teachers resist being out of their classrooms due to the concern of the quality of instruction when a substitute is present. Any professional development occurring outside of the duty day, as negotiated by the district and the teachers' union, requires payment and is optional. The struggle remains to engage all teachers in professional development that will enhance learning in ways that are job-embedded, efficient, and timely.

The Digital Learning Grant provides funding for the Maryland district to implement an initial digital conversion focused on (a) the development of a digital curriculum, (b) supporting the purchase of devices, and (c) providing professional development around learner-centered strategies for the classroom. Although a significant amount of face-to-face professional development is allocated in the preparation phase of the grant through classroom substitute coverage, there is limited funding dedicated to the sustained professional development throughout the digital conversion implementation in the 2015-2016 school year. This study will examine the role that an online professional learning community plays in supporting the professional development necessary to sustain the learning of teachers as they implement a digital conversion.

### **Theoretical Framework**

Isolated workshops remain the primary manner in which professional development occurs, with teachers passively listening to experts concerning topics that do not influence their teaching (Boyle et al., 2004). Hargreaves (2000), however, suggested that professional development has transitioned to a collaborative approach, allowing

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teachers to pool resources and expand their understanding of teaching methods, resulting in a change of professional learning that transitioned teachers' learning to onsite professional learning communities. This shift in professional development grounds this study in the sociocultural theory, situated learning theory, and constructivism theory. These theories suggest that professional development must engage learners as they work together in authentic, social situations to construct meaning using tools, resources, and technologies that are specific to solving problems in the teaching profession.

### **Situated Learning Theory**

Situated learning theory suggests that learning is situated within authentic activity, culture, and content (Brown, Collins, & Duguid, 1989; Lave, 1991). Gee (2008) suggested that learning is not only in one's head but that learning exists in "relationship between an individual with both a mind and a body and an environment in which the individual thinks, feels, acts, and interacts" (p. 76). The ability to learn by building model simulations helps the learner test experiences and prepare for application to the world (Brown et al., 1989; Gee, 2008). A community context defines how tools or knowledge is best used for a specific social group (Brown et al., 1989). Situated learning theory suggests that learners have an opportunity to not only acquire knowledge but to use the knowledge actively to wrestle with problems of the world which is often missing in classroom tasks (Brown et al., 2008). In order for teachers to learn in adult learning situations, they must be presented with an opportunity for social interaction and collaboration as they construct knowledge around a common goal in the authentic setting of teaching (Wenger, 2011).

### **Sociocultural Theory**

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A focus on social interaction and collaboration is encompassed by a sociocultural theory that grew from Vygotsky's (1978) work, which suggests that learning in the "zone of proximal development," that is, stressing what children can do with assistance, is a greater indication of their mental development than what they can do alone. Applying Vygotsky's (1978) "zone of proximal development," adult learning can also be enhanced if that learning is found in a social context focused on the area where participants can learn with assistance from a supportive context, including human resources, technology tools, and resources.

The sociocultural theoretical approach frames learning in relationship with the social environment, placing emphasis on the tools, objects, and people within that environment (Bransford, Brown, & Cockings, 2000). Learning reflects the social nature of humans capable of knowing (Wenger, 1998) and "places a premium on learner's experiences, social participation, use of mediating devices (tools and technologies), and position within various activity systems or communities of practice" (Gee, 2008, p. 100). A sociocultural theory addresses knowledge in relationship to the individual with a mind, body, and environment in which the individual thinks, acts, and interacts (Gee, 2008).

Sociocultural theory suggests that different people with different knowledge and skills come together in a community and afford colleagues the possibility of action through sharing and discussion (Gee, 2008). Gee (2008) suggests that "people are smarter when they use smart tools" as well as work in a smart environment (p. 89). These smart tools, including technologies or people, can accomplish more than what is individually possible when networked together and focused on the learning that is found in the network of the group (Gee, 2008).



### **Constructivist Theory**

The constructivist perspective emphasizes Vygotsky's focus on socially situated learning, Piaget's focus on individual cognitive constructive, and Dewey's emphasis on student learning through the genuine world by interacting with others (Ruey, 2010). This seems to be a perfect context for adult learning as the "rich life and employment experience, the social, situated nature of learning through practices appears particularly authentic and appropriate" (Ruey, 2010, p. 707). Constructivist theory provides a perspective on how individuals learn by creating meaning from experience (Ernest, 2010). As learning is occurring in a constructivist environment, the learner is filtering input from the world to produce its own reality, suggesting that knowledge is not acquired, but that knowledge emerges in learning contexts that include actual experience (Ertmer & Newby, 1993). Knowledge is dynamic and built around discovery where learners are building interpretations of the world as they experience and interact, rather than a transfer of learning from the world to memory (Ertmer & Newby, 1993).

Constructivist theory brings to professional development a learner-centered environment requiring self-directed learners that are highly motivated, know what they want to learn, are able to set their own objectives, find resources, and evaluate their learning (Huang, 2002). The constructivist learner's ability to solve their own real life problems is emphasized, making them suited to dealing with ill-defined problems, such as the ones that teachers are confronted with daily, through reflection in action (Ertmer & Newby, 2002). Huang (2002) highlighted the relationship between technology and constructivism and advocated for online environments, which use web-based resources that provide the learner with rich resources to solve problems and create meaning. For

example, online discussion groups offer a space that can be “discussion-oriented, authentic, project-based, inquiry-focused, and collaborative” (Huang, 2002, p. 35).

### **Professional Development, Online Professional Development, and Technology Integration**

A digital conversion is based on the ability of the teacher to meaningfully integrate technology in the classroom to influence student achievement. Teacher professional development has been regarded as a critical feature of the success of technology integration (Birkerhoff, 2006; Cifuentes, Maxwell, & Bulu, 2011; Mouza, 2006). The literature around the effective characteristics of professional development focused on technology integration offers a guide in which to enhance the structure and core features of the professional development, which will support the teachers’ ability to transform instruction from a paper and pencil environment to one that is digital.

The professional organization, Learning Forward, defined professional development as “a comprehensive, sustained, and intensive approach to improving teachers’ and principals’ effectiveness in raising student achievement” (Slabine, 2011, p. i). The literature will provide perspective on both the structure and the core features of professional development that have been found to contribute to both the satisfaction and the effectiveness of teachers. In examining professional development, it is necessary to examine structural features including (a) the form, (b) the duration, and (c) the degree to which the professional development involves collective participation. This includes core features of professional development (a) the content, (b) the active learning of the participants, and (c) the coherent nature of the professional development (Garet et al., 2001). This review will focus on the structural features of professional development

including online formats of professional development. It will reflect on the perspectives of teachers and data that have been collected that content of professional development that provides maximum learning results for teachers. The structure and core features of professional development that have been found to influence teacher practice will then be explored further by reflecting on the literature around professional development specific to the integration of technology into the classroom.

### **Professional Development Format**

Two seminal studies on teacher professional development suggest that there are two formats of professional development; traditional and reform (Garet et al., 2001; Phillips, 2003). Traditional formats refer to workshops, institutes, and conferences, which occur outside of the teacher's day and with a person of a certain expertise. Reform professional development activities are organizational structures that take the form of professional learning communities, mentoring or study groups, which (a) take place during the school day, (b) are applicable to the classroom, and (c) are sustainable over time (Garet et al., 2001; Phillips, 2003). In a survey of 1,027 teachers who had participated in professional development sponsored by the Eisenhower program, professional development activities were found to produce better results if they (a) were longer in duration, (b) required collective participation, (c) involved professional conversation, (d) focused on content, and (e) required active learning (Garet et al., 2001).

Implementing reform professional development activities, such as creating learning communities in schools, have influenced teacher collaboration as well as student achievement (Phillips, 2003; Williams, 2013). Learning communities allow teachers to (a) personalize professional learning; (b) incorporate professional development into the

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school day; and (c) participate in study groups and peer networks that allow for classroom visits, video recording, reflecting on lessons, generating new teaching strategies, and participating in literature study groups (Phillips, 2003). The students in urban schools that have implemented reform professional development activities made dramatic academic growth (Phillips, 2003; Williams, 2013). Phillips (2003) noted that of the approximately 556 students in the middle school that focused on professional learning communities, approximately 90 percent of the students passed the state assessment. This is in comparison to only 50 percent of students passing the state assessment three years prior, before the implementation of learning communities. Williams (2013) noted that there were statistically significant growth rates in the mean reading percentages of students passing the state assessment after a three-year district wide implementation of learning communities. The elementary effect size in mean percentage passing was significantly small at .33 percent but large effect sizes at .75 percent for middle schools and .67 percent for high schools (Williams, 2013).

The authentic nature of a community practice may be the necessary environment to assist teachers in dealing with ill-structured problems that relate to the classroom and bring the learning to a deeper level. Putnam and Borko (2000) conclude, that “it may be that a combination of approaches, situated in a variety of contexts, holds the best promise for fostering powerful, multidimensional changes in teachers' thinking and practices” (p. 7). Summer workshops appear to be a powerful setting for teachers to learn subject matter and insight about how students learn, where instructional practices can be better learned when the experience is situated in the teachers' own classroom through reform formats of professional development (Putnam & Borko, 2000).

**Professional development using an online format.** With the expansion of the Internet and the potential for online learning, teachers are also opting to be involved in online professional development, a format of professional development that facilitates the characteristics of reform based professional development. When professional development is approached as a collaborative process woven together into authentic learning communities, online tools can facilitate the connection of teachers (Nielsen et al., 2007; Phillips, 2003). The Internet provides teachers with opportunities to collaborate with other teachers and experts outside their schools, providing social spaces for interaction, learning and the access of knowledge and resources (Duncan-Howell, 2010).

Perceptions, teacher knowledge, and instructional practices can be improved as a result of participation in online professional development (Fishman et al., 2013; Russell et al., 2009). Positive perceptions were found in a comparative study examining face-to-face and online professional development for mathematics teachers to determine if the mode of delivery affected the teachers' mathematical understanding and instructional practices (Russell et al., 2009). In this study, 55 teachers were randomly assigned to the face-to-face version of the course and 95 teachers assigned to the online version (Russell et al., 2009). While there were no statistically significant differences in regard to pedagogical belief scales between the face-to-face and online groups, there was significant difference in opinions about participating in future online professional development as teachers in the online version reported that they were more open to taking future courses online rather than face-to-face (Russell et al., 2009). These positive perceptions towards participation in online learning provide direction for meeting the

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needs of the English 10 teachers who will experience significant shifts in their instruction as they implement digital resources.

When studying the format used to present new curriculum materials, Fishman et al. (2013) found that in both online and face-to-face professional development, teachers reported increased confidence with materials. Teacher knowledge, when assessed through a knowledge check as a result of the professional development, had gains in both online and face-to-face professional development with the online version showing slight gains over the face-to-face, although it was not statistically significant (Fishman et al., 2013). Russell et al. (2009) found similar results in a comparative study looking at a face-to-face and online professional development for mathematics teachers to determine if the mode of delivery affected the teachers' mathematical understanding and instructional practices. The study found that in both the face-to-face and online professional development knowledge increased, and, through an analysis of student surveys and teacher logs, found that instructional practices improved. In the online group the results from the teacher logs showed significant changes in sixteen categories of instructional practices, compared to fifteen categories in the face-to-face, showing statistically that both courses had similar positive effects on the instructional practices (Russell et al., 2009).

**Online professional development to support technology integration.** In a seminal study, Cuban, Kirkpatrick, and Peck (2001) determined, through interviewing 21 teachers and 26 students in two California high schools, that teachers, even when the access to technology is outstanding, use technology infrequently and in limited ways. They attributed this finding to time and training as teachers do not have time to find and evaluate software, training was offered at inconvenient times, and teachers found the

training to be irrelevant to their need. Online professional development has the potential to fit a teacher's schedule, pull from resources not available locally, and provide an ongoing, job-embedded support (Dede et al., 2009).

As well as supporting teachers logistically, an online professional development experience supported teachers integrating technology by facilitating communication and collaboration as well as providing connections to authentic practices (Ching & Hursch, 2014; Chitanana, 2012; Rienties et al., 2013; Vavasseur & MacGregor, 2008). In a study that examined 69 teachers over three years who were involved in a four week online professional development course, the discussion in the online community was found to facilitate knowledge building as teachers focused on producing their own web-based tools (Ching & Hursh, 2014). Vavasseur and MacGregor (2008) also found that a technology focused online professional development community increased communication and collaboration among teachers and determined that the online structure made technology more meaningful for teachers as it added support to face-to-face sessions. In addition to collaboration and communication, Chitanana (2012) in studying an online professional development course of 28 educators which focused on technology skills within a project based learning environment concluded that an online structure was also able to connect learning to relevant contexts and authentic practices through the use of videos, case studies, and projects. Using pre-test and post-test evaluations of 81 teachers involved in an online professional development program, there was a significant increase in the technology-enhanced learning infused in the daily practice of the 81 teachers (Rienties et al., 2013). In addition, there was a significant increase in positive attitudes about technological pedagogical knowledge (Rienties et al.,

2013). These studies demonstrated that using a format of online learning not only facilitates reform based professional development, but is being shown to enhance learning for the teacher.

### **Duration**

Duration of professional development is seen as a critical component to reform professional development in providing opportunities for serious and sustained learning of the curriculum, students and teaching (Ball & Cohen, 1999; Garet et al., 2001; Penuel et al., 2007). In a study focused on the impact of ongoing professional development in deepening teacher's content and pedagogical knowledge, teachers' attitudes and perceptions around preparedness to teach improved the longer their participation in the professional development (Banilower, Boyd, Pasley, & Weiss, 2006). In this study, teachers who had participated in 60 or more hours of professional development reported through interviews, that professional development had a greater impact on content, instructional strategies, and assessment strategies than those teachers with fewer than 60 hours (Banilower et al., 2006). Through classroom observation data, the quality and developmentally appropriateness of math and science content was positively correlated with engagement in professional development in relationship to time in hours (Banilower et al., 2006). In an analysis of nine professional development studies to determine the characteristics of professional development that translate to gains in student achievement, teachers who receive substantial professional development, an average of 49 hours across the nine studies, had a positive and significant effect on student achievement (Yoon, Duncan, Lee, Scarloss, & Shapley, 2007).



### **Duration of professional development to support technology integration.**

When considering professional development to support technology integration, the duration is a critical component as teachers must master not only the technology but also the pedagogy required in integrating the technology in the classroom. In a study around participation in a two-year technology integration learning community, 50 participants were found to use a wide variety of technology in their classroom, as well as experiencing a sense of empowerment and expertise (Cifuentes et al., 2011). Eighteen elementary teachers involved in a situated professional development focused on the use of technology in their classrooms had students who were engaged and involved in higher order thinking using technology (Kopcha, 2012). Cifuentes et al. (2011) and Kopcha (2012) suggested that one possible reason for these positive results includes sustaining professional development over time.

It may require several years to learn to integrate technology as cognitive tools for knowledge construction rather than simply using technology for drill and practice and searching (Mueller, Wood, Willoughby, Ross, & Specht, 2008; Wang, Hsu, Reeves, & Coster, 2014). Hours of training were found to be a strong predictor of technology integration (Hsu & Kuan, 2013). When surveying 3,729 teachers concerning their commitment to receiving training, Hsu and Kuan (2013) found a positive correlation between the duration of training and the ability to integrate technology. Long professional development contact hours, up to 240 hours, were found to have an effect of the teacher's technology skill level as well as teaching practices focused on student use of technology as cognitive tools (Wang et al., 2014). The continuous nature of online

learning has also been found to be more effective in facilitating a change in practice (Cifuentes et al., 2011; Kopcha, 2012).

### **Content**

Reform-based professional development is also found to be more effective and likely to change a teacher's practice when it is linked to the curriculum and focuses directly on how to use strategies and materials (Penuel et al., 2007). When 207 teachers across 30 schools found in 10 districts in five states, involved in a longitudinal study, were asked to describe optimal professional development, they reported that they desired to be active participants in the learning, not passive recipients of information, and requested to use specific practices in the classroom, such as reviewing student work and obtaining feedback on teaching (Desimone et al., 2002). Professional development, which is integrated into everyday practices and focused on subject matter content, appears to have the largest effect on the teacher change of practice as self-reported by teachers (Garet et al., 2001). Garet et al. concluded that professional development activities focused on content alone, and do not increase knowledge and skill, are negatively associated with teacher practice. This supports the conclusion that teachers were more likely to teach in ways that were associated with student achievement growth when professional development focused on content in combination with instructional strategies (Desimone, Smith, & Phillips, 2013).

**Content in an online environment.** When involved in online professional development there is a consistent theme that teachers are looking for knowledge and practical applications to improve their practice (Duncan-Howell, 2010; Hew & Hara, 2007; Jung Won & Brush, 2009). Jung Won and Brush (2009) conducted a case study by

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interviewing 23 teachers who participate in one of three voluntary online communities that have more than 1,000 participants, demonstrating the characteristics of a community of practice, to determine why teachers participate in online communities. Teachers suggested that they participated to find ideas that are appropriate and specific to their unique teaching situations and are looking for proven ideas, broad perspectives that would initiate even more ideas, and reflection from teachers on what they had found effective (Jung Won & Brush, 2009).

Similar results were found when surveying 98 members of three online professional development communities in a study which looked at participation and satisfaction in an online professional development opportunity (Duncan-Howell, 2010). The reasons for membership in the online communities included access to “subject-specific resources, handy hints for the classroom, new relevant content, access to expertise to solve classroom problems, sharing lesson ideas and support for classroom problems” (Duncan-Howell, 2010, p. 335). Duncan-Howell found that 34.69 percent of the 98 responses indicated positive change to teaching practice, with 33.67 percent of respondents indicating an improvement in student learning as the primary aim of their participation in professional development. Of the teachers participating, 86.7 percent agreed that online professional development is as meaningful as face-to-face professional development, noting the advantages of authenticity and immediate subject matter (Duncan-Howell, 2010).

Yang and Liu (2004) interviewed teachers and evaluated discussion forums to evaluate the participation and perspectives of 128 teachers involved in online communities. They found the online experience to be “positive, rewarding, constructive,

empowering, exciting and challenging” and felt as if the experience helped them “clarify mathematical concepts, deepened their understanding of children’s cognitive development and capacity; helped them to develop multiple ways of thinking about mathematical instruction and teaching, and gave them opportunities to learn about innovations in practice, new resources and skills” (Yang & Liu, 2004, p. 752). However, it was concluded that the interaction did not engage participants in deep ways and suggested that online communication must lead the participants to seek shared understanding and collaboratively solve problems that concern authentic classroom experiences (Yang & Liu, 2004).

O’Dwyer et al. (2010) conducted four studies with 79 teachers and 1,438 students in fifth grade mathematics, 71 teachers and 1,889 students in 8<sup>th</sup> grade mathematics, 110 teachers and 1,688 students in 4<sup>th</sup> grade language arts, and 80 teachers and 2,056 students in 7<sup>th</sup> grade language arts to determine if online professional development had a large effect on teachers’ instructional practices and knowledge in the areas of mathematics and language arts. Dash, de Kramer, O’Dwyer, Masters, and Russell (2012) continued to discuss one of the trials, a fifth grade study on mathematics, and found that the online professional development courses in fractions and algebraic thinking led to significant gains in the scores of pedagogical content knowledge and practices for the teachers. Online professional development should focus on providing teachers with tools, strategies, and opportunities to explore engaging activities that they could integrate into their classroom instruction (Dash et al., 2012). Dash et al. (2012) suggested that the online professional development allowed teachers to actively explore students’ conceptions and misconceptions about mathematics through various activities and an

analysis of student work. The focus in this study was on pedagogical knowledge specifically designed to support mathematical practices (Dash et al., 2012).

**Professional development focused on technology content.** Pedagogical knowledge, content knowledge, and technology knowledge must be integrated in the professional development that focuses on transformation of a traditional classroom to one that integrates technology (Ching, 2014; McGrail, 2007; Eteokleous, 2008, Rienties et al., 2013). McGrail (2007) when qualitatively examining six teachers in a laptop implementation, specifically focusing on the challenges that these teachers experienced, concluded that teachers and school administrators must place a greater emphasis on professional development which emphasized pedagogy before technology. Using a model to integrate content, pedagogy, and technology knowledge, teachers participating in online professional development were found to be likely to use technology and confident in their abilities to integrate technology within their pedagogy and content area (Rienties et al., 2013). Ching and Hursh (2014) also used a model that would structure technology professional development in an online community and bring together content, pedagogy, and technology. They concluded that it was the exemplary teacher projects that were shared using this framework that most influenced the teachers' ability to transform practice.

Teachers are looking for technology focused professional development that provides hands-on, relevant experiences. In a survey conducted of 185 elementary and 204 secondary teachers to discriminate the characteristics between the teachers who integrate computers and those that do not, the potential for positive outcomes was the variable was most often found (Mueller et al., 2008). Mueller et al. (2008) concluded that

professional development needs to provide hands-on direct practice in the classroom or teaching context so that teachers are confident of the affordances it can bring to the classroom. Hsu and Kuan (2013) concluded that improving the efficiency of instructional activities has an impact on the willingness of teachers to integrate technology and suggested that practical uses of technology be highlighted in professional development. Wang et al. (2014) also emphasized the relevance of professional development to the classroom, in a study which found that teachers grew confident and applied learning in new ways, when they were prompted to go through similar processes in professional development, as a teacher would use in the classroom.

### **Collaboration**

Along with desiring professional development that integrates content and instructional practices, teachers are looking for professional development to facilitate collaborative experiences (Desimone et al., 2002; Garet et al., 2001; Hew & Hara, 2007; Penuel et al., 2007; Williams, 2013). Providing collaborative experiences is a distinct characteristic of reform professional development (Garet et al., 2001). “Historically, schools have been structured so that teachers work alone, rarely given time together to plan lessons, share instructional practices, assess students, design curriculum, or help make administrative or managerial decisions” (Darling-Hammond et al., 2009, p. 11). Teacher individualism, isolation and feelings of self-sufficiency are prevalent within teacher culture (Hargreaves, 2000). In order for active learning to occur and to support change in the teaching practice, teachers through self-report, indicate that collective participation of groups of teachers discussing teaching practice on a regular basis, is necessary (Desimone et al., 2002; Garet et al., 2001; Penuel et al., 2007). Williams

(2013) concluded that a culture of teacher collaboration is “critical to student achievement” (p. 38) and Hew and Hara (2007) suggested that teachers sharing knowledge with one another to improve practice is at the core of professional development.

**Online collaboration.** An online learning community has the potential to support teacher collaboration, which has been found to not only support the teacher instructionally, but also emotionally. Goldberger (as cited in Duncan-Howell, 2010) suggested that “An interesting feature of an online community is the sense of place it creates in the user as feelings of disconnectedness, isolation and aloneness are reduced. Members do not feel that being in one place cuts them off from other places” (p. 326). Duncan-Howell (2010) reported that the importance of socially constructed knowledge within professional development was implied, as 65.2 percent of the 98 responses involved the word colleague when asked about preferred learning methods. When implementing professional development, “Creating an environment where teachers freely share issues and emotions and receive appropriate advice and support is critical” (Jung Won & Brush, 2009, p. 298). Learning occurs through participation in communities, as teachers suggested that online communities combat isolation that they feel in their schools where there was no time to talk and helped them to feel a sense of belonging (Jung Won & Bush, 2009).

“Emotion and cognition, feeling and thinking, combine together in all social practices in complex ways” (Hargreaves, 2001, p. 1056). Duncan-Howell (2010) reported that 38.1 percent of the 98 participants joined an online community because they were looking for emotional support. Participants noted the warm environment and a sense of

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belonging and camaraderie as they reported that they experienced passing along information and asking for help (Duncan-Howell, 2010). A large emphasis has been placed on teachers participating in online communities for emotional support, as the postings in an online community where teachers were sharing emotions received great attention, both as teachers shared negative and positive emotions related to teaching (Jung Won & Brush, 2009). For example, one posting about the stresses of teaching received 72 replies and had been viewed more than 11,400 times in contrast to posts that generally received 1 to 8 replies and slightly fewer than 700 views (Jung Won & Brush, 2009). Teachers were found to be motivated to participate in an electronic mailing list supporting literacy teachers to engage in problem solving tasks, which require sharing personal knowledge, opinions, and suggestions (Hew & Hara, 2007). Collectivism, aiming to advance the field of literacy and improve literacy teachers as a group, and reciprocity, helping others because they had been helped in the past, were the motivating factors to share knowledge (Hew & Hara, 2007).

### **Statement of Problem and Objectives**

The Maryland district seeks to digitally convert classrooms which involves the “transformation of instruction from a paper-based world to a primarily digital world, in which every student and teacher has access to a personal computing device and the Internet anytime/anywhere” (Edwards, 2013, p. 2). Creating digital learning environments will require professional development that provides the structure, content, duration, and collaboration that influences teacher practice and transform classrooms. Several research studies conclude that all teachers, are looking for professional development that addresses the critical content necessary to be successful in the



classroom (Dash et al., 2012; Desimone et al., 2002; Desimone et al., 2013; Duncan-Howell, 2010; Garet et al., 2001; Hew & Hara, 2007; Jung Won & Brush, 2009; Penuel et al., 2007; Yang and Liu, 2004). Professional development addressing technology integration must focus on the technology as well as the content and the pedagogy, providing practical and relevant subject specific strategies (Ching & Hursh, 2014; McGrail, 2007; Eteokleous, 2008, Rienties et al., 2013).

Several research studies highlight the critical nature of providing professional development that is sustained over time rather than occurring during isolated workshop experiences (Ball & Cohen, 1999; Banilower et al., 2006; Garet et al., 2001; Penuel et al., 2007; Yoon et al., 2007). Sustained professional development experiences which involves a significant number of hours, allows for teachers to engage deeply in learning technology skills, but also provides the time for the technology to be learned in relationship to content and pedagogy and apply these practices in the classroom (Cifuentes et al., 2011; Hsu & Kuan, 2013; Kopcha, 2012; Mueller et al., 2008; Wang et al., 2014).

Collaborative experiences are found to be a critical component of reform professional development as these experiences have been seen to impact the potential for learning as they provide teachers not only with instructional support but also emotional support (Duncan-Howell, 2010; Hew & Hara, 2007; Jung Won & Brush, 2009; Nielsen et al., 2007; Williams, 2013). Professional learning communities and online professional learning communities are not only job-embedded but engage learners over time as they collaborate with peers and construct knowledge together. If framed and designed appropriately, reform-focused professional development literature suggests that an online

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format could enhance the face-to-face workshop offerings, providing sustained learning and networking opportunities for English 10 teachers to assist them in dealing with the ill-structured problems that will be encountered as they implement a digital conversion.

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### Chapter 3: A Needs Assessment Examining Professional Development to Support a Digital Conversion of Grade 10 English

Sustained professional development experiences should be developed to support English 10 teachers as they implement a digital conversion. Professional opportunities to address the ill-structured problems that teachers are encountering as they strive to integrate technology in relationship to English content and pedagogy will enable them to learn strategies that lead to direct application. Professional development reflects a workshop format delivered on professional development days. The history of professional development in the Maryland district has followed the trajectory outlined by Hargreaves (2000) who suggested how, over time, professional development transitioned from being non-existent, as teachers are expected to learn from their own experiences, to isolated teacher-based experiences, and is struggling to reach the collaborative approach that educational reform suggests is necessary.

The Maryland district has attempted to implement a collaborative approach allowing teachers to pool resources and expand their understanding of teaching methods, transitioning professional learning from conferences or workshops offsite to professional learning onsite, and bringing teachers together to apply learning to the community in which they work. These professional learning communities are evident in some schools but have not been implemented in a systemic manner and do not permeate beyond the school level to that of the district level. The district has experienced the challenge that Hargreaves (2000) describes in building these communities in authentic, well supported ways that benefit teachers and students alike, but without forcing a collegiality that can be resisted which overloads teachers.

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In this district, the challenge is exacerbated in that the structure for professional development has not changed over the last 20 years. Teacher professional development has been provided for a total of 10 days designated at specific times during the school year with very little time provided during the school day for teacher learning. The 10 days of development opportunities are divided between district wide content specific professional development, school specific professional development, and negotiated planning time. Due to the structure of the professional development calendar, the district tends to fall back to the assertion that Boyle et al. (2004) note regarding professional development occurring in isolated workshops where teachers are passively listening to experts concerning topics that do not influence their teaching.

### **Goals and Objectives**

This needs assessment will focus on the professional development needs of English 10 teachers related to the implementation of a digital conversion. Surveys and interviews will determine what the English 10 teachers and English Language Arts content supervisors believe to be the most critical content needed when implementing a digital conversion and the structure, including duration, format, and opportunity for collaboration that they believe to be most effective in conveying this content. The needs assessment will be guided by the following research questions:

- What do English 10 teachers and English content supervisors identify as critical professional development content for implementing a digital curriculum and tablet devices?
- What professional development structures, including format and duration, do they perceive as most helpful for conveying the professional development content?

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- How significant are collaborative experiences within professional development structures when implementing a digital conversion?
- To what extent are English 10 teachers currently able to address the diverse needs of all learners by using learner-centered strategies and providing equitable access to appropriate digital tools and resources?

Focusing on the perceptions of the English 10 teachers as well as those of the English Language Arts supervisors, complimented with what is known from the literature, will enable a professional development intervention to be designed that will strive to enhance the effectiveness of teachers, ultimately impacting student learning.

### **Methodology**

The needs assessment used a mixed method approach to focus on the professional development needs of English 10 teacher and supervisors regarding the manner in which the structure and content of professional development provides the necessary professional learning to implement a digital conversion.

### **Participants**

Surveys and interviews were conducted of the English 10 teachers and supervisors. Of the 39 English teachers taking the survey (a) 13 have taught for fewer than five years, (b) nine have taught from 5-10 years, (c) six have taught for 10-15 years, (d) four have taught 15-20 years with six teaching more than 20 years. The teachers range in age from under 25 to 64 with most English 10 teachers falling in the 25-34 age range. The four English 10 teachers who were interviewed were volunteers and represented various age range and various high schools within the district. Both the Supervisor of

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English Language Arts and the Assistant Supervisor of English Language Arts were interviewed.

### **Variables**

The structure and content of professional development has been shown in the literature to influence teacher practice and therefore will be the variables studied in the needs assessment (Banilower et al., 2006, Garet et al., 2001, Yoon et al., 2007).

Structural features of professional development include the variables of format, duration, and the manner in which the professional development reflects collaborative experience.

English 10 teachers were asked in a needs assessment survey to indicate the professional development formats and characteristics of those formats that they would prefer as they implement a digital conversion. A question in the interviews also asked English 10 teachers and English Language Arts Supervisors to suggest a preferred professional development format as a digital conversion is implemented. English 10 teachers and supervisors were also asked to discuss the ideal duration of professional development through interviews and designate the ideal number of preferred hours for professional development on a survey. The teachers and supervisors also discussed within the interview and indicated on a Likert scale the importance of collaboration with other English 10 teachers and in the district and in the school.

Professional development topic or content is another variable that is shown in the literature to influence the ability of professional development to affect teacher practice. In this needs assessment, the respondents reflected on their own practices using characteristics of a student-centered, technology enriched learning environment. Characteristics were grouped by lesson planning and preparation, creating digital learning

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environments, classroom instruction, and professional practice. Topics for professional development were also a focus of discussion in the interviews. Walk-through data was also collected by The Supervisor of English/Language Arts and The Coordinator of Instructional Technology reflecting the technology available in each classroom, indicating if the technology was being used and whether whole group instruction, small group instruction, or independent work was evidenced which indicates potential topics for professional development.

### **Data Collection Methods**

The needs assessment data collection included both qualitative and quantitative measures for two groups; English 10 teachers and those that are directly responsible for the professional development of English 10 teachers, The Supervisor of English Language Arts and The Assistance Supervisor of English Language Arts. Walkthrough data and a survey provided initial quantitative and qualitative data, which was further extended through the collection of interview data were included in this study.

**Surveys.** A survey was developed and distributed through Survey Monkey to assess the need of English 10 teacher around the variables (see Appendix A). Teachers were asked to indicate by making a selection of hour ranges regarding the duration of professional development that would be ideal in implementing a digital conversion. They also indicated the structures of professional development that would be preferable. Through responding on a Likert scale, English 10 teachers indicated the importance of collaboration with other English 10 teachers in the school and in the district. Reflecting on a list of characteristics of digital learning environments, English 10 teachers indicated

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agreement or disagreement, reflecting the level of practices that facilitate digital learning environments.

**Interviews.** To further indicate need around the professional development during the implementation of a digital conversion, qualitative data were collected through semi-structured interview with English 10 teachers and English 10 supervisors. Meeting with each at their schools or offices for approximately 20 minutes, the participants were presented questions that would reflect the content and structure of professional development needed to implement a digital conversion.

Supervisors responded to the following questions:

- How is professional development currently offered to English 10 teachers? What do you hope they learn? What do they learn? What are the strengths of this structure? What are the challenges?
- What do you anticipate being the greatest challenges as English 10 teachers implement digital conversion? Explain the ideal professional development for meeting these challenges in regard to duration, format, and content.
- How important is collaboration as English 10 teachers implement digital conversion? How would you like to see the collaborative opportunity structured?
- Describe the benefit of an online community in supporting the implementation of digital conversion.

English 10 teachers responded to the following questions reflecting content and structure of professional development:

- Think back to the day that you were informed of the English 10 Digital Conversion Grant. What did you anticipate being your greatest challenges as you



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implement a digital conversion? Explain the ideal professional development for meeting these challenges in regard to duration, format, and content.

- As you implement the digital conversion, how important is it to collaborate with other English 10 teachers? How would you like to see the collaborative opportunity structured?
- How do you currently receive professional development? Would this same approach meet your needs around implementing a digital conversion?
- If presented with an online community to model and support the implementation of digital conversion, what would motivate you to participate?

The interview was recorded, transcribed, and coded to determine the themes that would reflect the variables that have been identified.

### **Needs Assessment Findings**

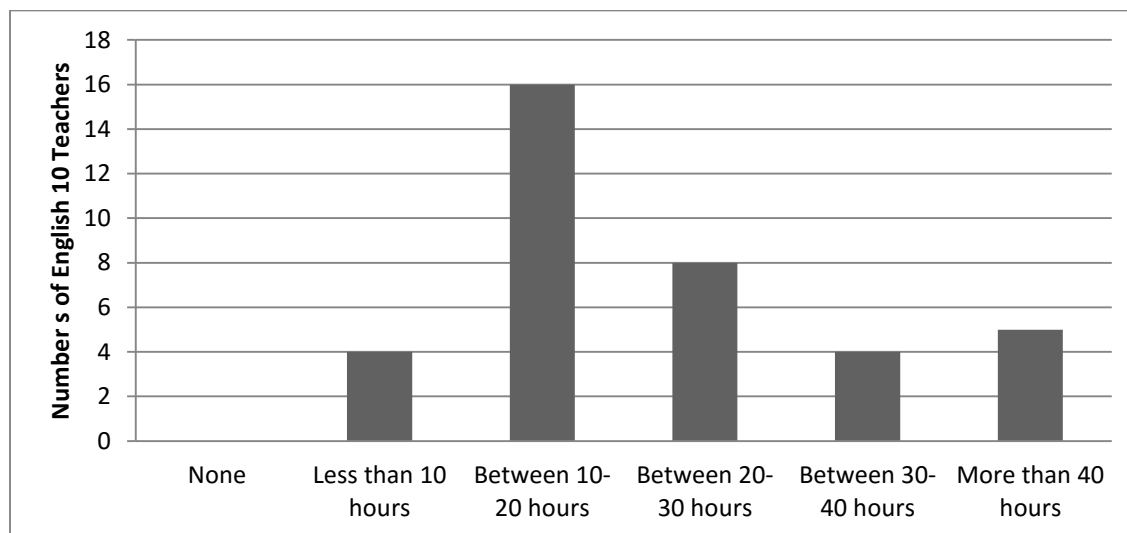
Data that have been collected both through qualitative and quantitative means provide a view into the English 10 teacher's perceptions around the professional development structure, including format, duration, and opportunity for collaboration and professional development content that will be needed to implement a digital conversion.

#### **Duration**

The duration of professional development in hours is connected with its ability to influence professional practice (Ball & Cohen, 1999; Garet et al., 2001; Penuel et al., 2007). This has been found to be essential for technology related professional development (Cifuentes et al., 2011; Hsu & Kuan, 2013; Kopcha, 2012; Mueller et al., 2008; Wang et al., 2014). As demonstrated in Figure 1, most English 10 teachers suggest that they would need more than 20 hours of professional development throughout the

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implementation of digital conversion with (a) 8 teachers requesting between 20-30 hours, (b) 4 requesting between 30-40 hours, and (c) five requesting more than 40 hours of professional development. Sixteen teachers request between 10-20 hours of professional development. Four teachers requested less than ten hours.



*Figure 1.* Preferred Duration of Professional Development. This figure illustrates the preferred duration of professional development in hours according to English 10 teachers.

The interviews provide further insight into teachers' perception of the necessary duration of professional development. One teacher suggested that there be "a gradual release after four to five focused sessions" and went on to suggest that "we will need a whole year to focus on the bugs and make it work." (personal communication, January 27, 2015). The Supervisor of English Language Arts commented, "I think the professional development will be ongoing because technology is one thing that is always changing so what they are learning today, there could be new tools or devices. I see it always changing and we grow with it" (personal communication, February 2, 2015). The Assistant Supervisor of English Language Arts addressed the need of providing initial professional development and the follow up required. She stated "through observation

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and evaluation, we will see where there are gaps and specify the professional development to meet needs the next go around” (personal communication, February 2, 2015).

When asked about the duration of professional development, each of the six individuals interviewed mentioned the challenge of time. One teacher stated, “One of the greatest challenges is the amount of time that it is actually going to take to understand the information to present it to the students” (personal communication, February 4, 2015). In relationship to that challenge, the Supervisor of English Language Arts reflected on the current professional development structure, “We are only given a half day to meet with English teachers on a county wide basis. A three-hour session a year is not going to be sufficient with the number of new initiatives going on in the district and in our curriculum” (personal communication, February 2, 2015).

Understanding this challenge, the teachers were asked how they would meet the professional development needs of a digital conversion. One struggled with an answer as she stated, “That’s a really good question. Well I certainly wouldn’t take teachers out of their classrooms. I wouldn’t put this on top of ... It would have to be ... I don’t know! Personally, I don’t like to have to work in the summer, but I would definitely offer compensation and it would not take us out of the classroom” (personal communication, February 2, 2015). Another teacher stated, “There are pros and cons to having professional development throughout the school year. I don’t like being away from my kids or writing sub plans. I’m going to be away all summer” (personal communication, February 4, 2015).

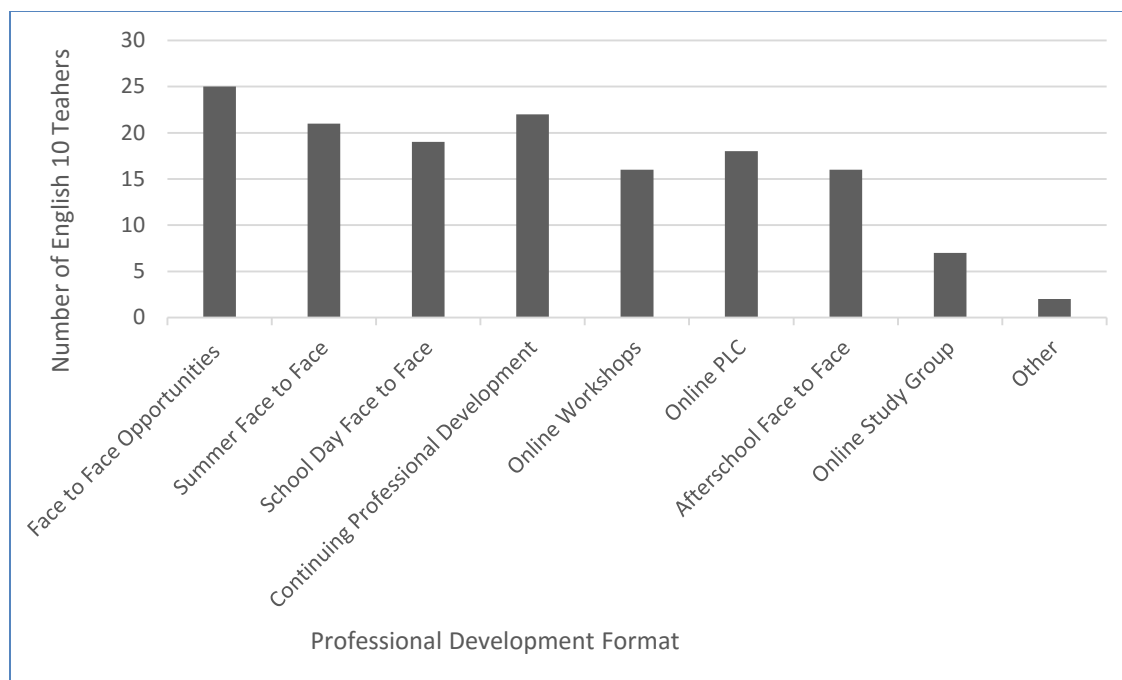
## DIGITAL CONVERSION AND PROFESSIONAL LEARNING

Duration of a professional development is seen as a critical component to professional learning as it provides opportunities for serious and sustained learning of curriculum and teaching (Ball & Cohen, 1999; Garet et al., 2001; Penuel et al., 2007). With teachers responding that they would prefer 20 or more hours of professional development yet expressing frustration of the manner in which to participate, it is obvious that a true dilemma exists regarding the perceived need around sustained, ongoing professional development, and the time limitations in engaging teachers in the desired professional learning.

### **Format**

When responding to questions on the survey regarding the format of professional development, teachers could choose as many or as few of the responses as they preferred. In relationship to face-to-face professional development, (a) 25 teachers responded that they prefer face-to-face opportunities to share practices, (b) 21 teachers suggested that they would be interested in summer face-to-face workshops, (c) 19 preferred face-to-face workshops during the school day, and (d) 22 suggested continuing professional development courses. In relationship to online options, as shown in Figure 2, 16 teachers suggested that they were interested in online workshops and 18 in online professional learning communities for the sharing of practices. One teacher added a response in a comment block, suggesting an option that involved unstructured time to work with colleagues in their school.

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*Figure 2.* Professional Development Format. This figure illustrates the professional development formats that English 10 teachers prefer.

One teacher responded in her interview that “I think face-to-face is the best kind of professional development” but then went on to say that she attended a summer conference with handouts and presentations online that she could revisit and she appreciated that access (personal communication, February 9, 2015). The Supervisor of English Language Arts, when reflecting on the face-to-face structure of professional development, shared the challenge by questioning, “How do you meet the needs of 120 teachers without it being one message for all and a stand and deliver model. If you don’t do that, you do breakout sessions and then you have to have enough qualified presenters to run the sessions so that you can maximize the time with smaller groups” (personal communication, February 2, 2015). When asked about the characteristics of professional development that should be reflected in these formats, teachers responded that

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demonstrating lessons that integrate technology and providing strategies that can be used immediately was essential.

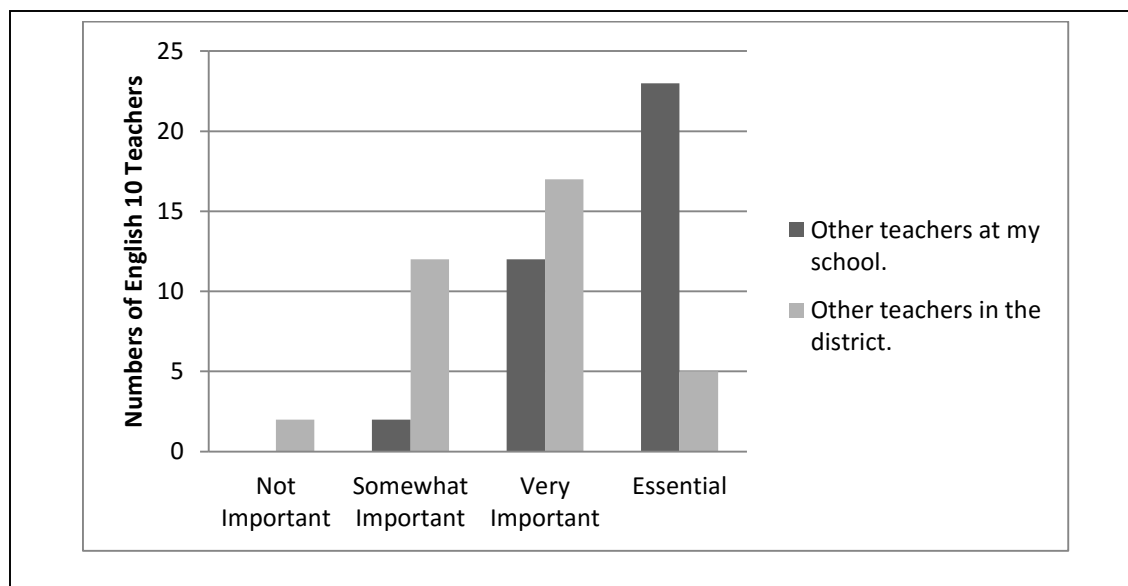
**Online formats.** In the interviews, the four English teachers mentioned how online options would enhance their work, but should not replace face-to-face sessions. The Assistant Supervisor of English Language Arts stated, “I think it will be more of a blend, not just a stand and deliver or work session, but a model that allows them to have online opportunities” (personal communication, February 2, 2015). One teacher commented that as an International Baccalaureate teacher, that she receives much of her training online. She said “As long as they are packaged modules that teachers can access easily and include step by step directions because teachers need the hand holding, I think that could be successful, but it is important that there is an option for those who aren’t comfortable” (personal communication, January 27, 2015). Another teacher in brainstorming how professional development could be delivered said, “What would be really nice, because of time constraints and because we are working with technology online, something like Coursera or an online free class specifically designed for 10<sup>th</sup> grade tablet use and technology in the classroom. It would be great to go through a six week course and it’s on our own and we could do it at home and we could have a community and discussion. It would be nice if you could get a certificate at the end that would apply to certification re-up. You received a credit because you completed this experience. That would be super awesome” (personal communication, February 4, 2015). The Assistant Supervisor of English Language Arts suggested “an online community provides a safe place to share information and look for information. A person may not be willing to say I am struggling with this but they might be able to look through

the online discussion and find someone who has a similar problem or an answer to a problem in that way. I do think it provides the safety of being able to put information out there without judgment and being able to ask the questions and having some choice in what needs to be deepened specific to the learner” (personal communication, February 2, 2015).

These findings support several research studies in highlighting that teachers are looking for online formats to provide knowledge and practical applications to improve their practice (Duncan-Howell, 2010; Hew & Hara, 2007; Jung Won & Brush, 2009).

### **Collaboration**

Along with being sustained throughout the year, professional development could better meet the needs of new teachers if it provided collaborative experiences (Desimone et al., 2002; Garet et al., 2001; Hew & Hara, 2007; Penuel et al., 2007; Williams, 2013). English 10 teachers agreed that professional development should reflect a collaborative approach. On the needs assessment survey, of the 37 teachers replying, 12 suggested that collaboration with teachers at their school was very important while 23 stated that it was essential. In relationship to collaboration with others teachers in the district, 17 English 10 teachers stated that collaboration was very important with five stating that it was essential (See Figure 3).



*Figure 3.* Importance of Collaboration. This figure illustrates the importance that English 10 teachers place on collaboration with new teachers in their schools and in the district.

English 10 teachers spoke openly regarding the desire to collaborate with others throughout the interviews. They used words such as extremely important, vital, and invaluable. One teacher stated, “That is like the lifeline, I honestly think, of being an effective digital conversion instructor. There is no way you could possibly do it independently. I’m a firm believer in not reinventing the wheel. If you have a quicker way, or have figured out a way, we are here to help kids achieve and succeed, so it’s good to have friends and to network. All those things lead to quality instruction. It is vital. There is no way to do it without that collaboration” (personal communication, February 9, 2015). Another teacher added to that by referencing a district wide technology Facebook page, “I would like to see what teachers around the district are doing. I know the styles of the teachers in my school and I’d like to see what everyone is doing like the Facebook page, Digital Harford, provides. If we had some sort of electronic sharing to say this worked really well for the Icarus lesson like a technology



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interface to say Hey, I used this app or tried this and it worked great. Even if they created short video on it” (personal communication, February 4, 2015).

Despite the emphasis on collaboration many teachers are not collaborating around digital tools or with digital tools. Seventeen teachers disagree with the statement that they do not currently frequently collaborate with coworkers to share relevant digital tools, resources, or content and 17 do not use collaborative online tools to work with colleagues. The Assistant Supervisor of English Language Arts stated, “I think collaboration needs to be centered around a common need, goal, understanding among the teachers in the tenth grade. I think there should be a high need/low risk reward part of that collaboration where there is that freedom to experiment and work on things without any observation or evaluation piece. When you are able to collaborate, when you are able to bring ideas and hear from others that is one of the most powerful ways of learning and we have teachers on each team at each grade level who have strengths in certain areas so if we can bring them together through *itslearning*” (personal communication, February 2, 2015). The Supervisor of English Language Arts added, “For some of our teachers, it’s building the collaboration for them, it’s not going to be natural” (personal communication, February 2, 2015).

Schools are historically structured where teachers work alone in isolation (Darling-Hammond et al., 2009; Hargreaves, 2000). Professional development to support digital conversion may be more effective in influencing teacher practice if it includes collaborative experiences with other English 10 teachers. This aligns with several research studies that found that collaboration is at the core of professional development

and was influential in bringing about a change in teaching practice (Desimone et al., 2002; Garet et al., 2001; Hew & Hara, 2007; Penuel et al., 2007; Williams, 2013).

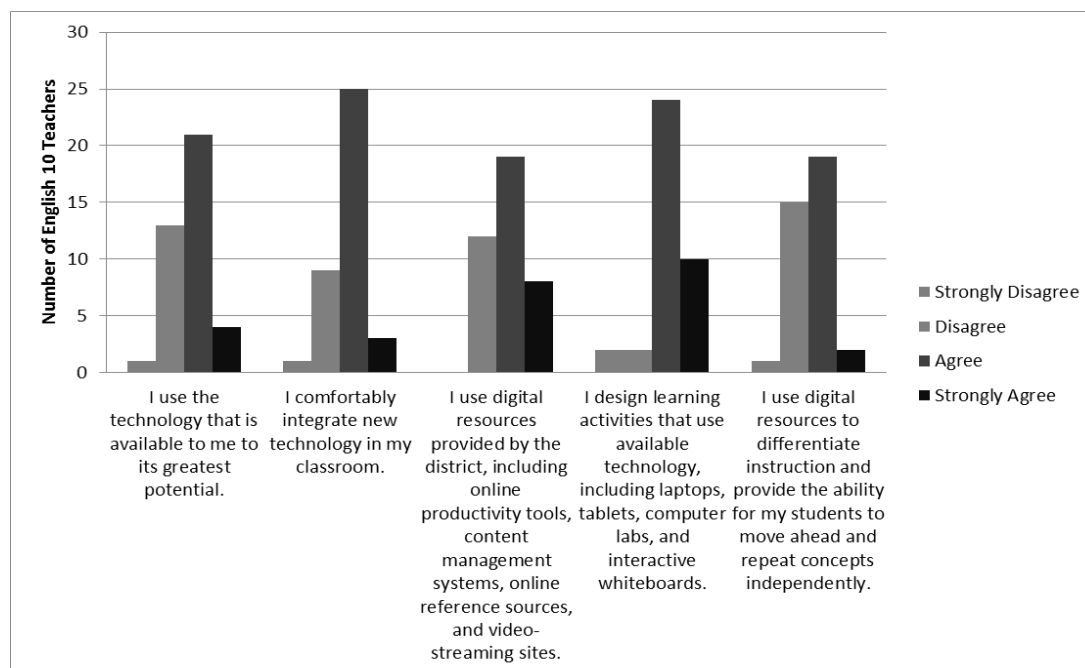
### **Professional Development Content**

The Supervisor of Reading, English, and Language Arts and The Coordinator of Instructional Technology visited 35 of 39 of the English 10 classrooms in 9 high schools to collect walkthrough data, indicating the technology used in the classroom by the teacher and the students. Data was also collected regarding instruction being presented in a teacher directed or student-centered manner. The purpose of collecting these initial data was to indicate the manner in which English 10 teachers were currently using technology in their classrooms as well as the instructional grouping patterns to indicate the technology content and pedagogical strategies that would be required in professional development. Of the 35 classrooms visited, 29 classrooms were engaged in instruction. Of those 29 classrooms, (a) 22 teachers were employing teacher directed whole group instruction, (b) five classrooms reflected small group work, and (c) five classrooms engaged students in working independently.

Of the classrooms observed, 26 had interactive whiteboards. Of the 26 classrooms that had interactive whiteboards, 19 were using the board with 17 being used as a projection device and two used interactively with students. Twenty-three classrooms housed a document camera, yet none were evidenced in use with students. Four classrooms housed laptops on a cart. In three classrooms, the students were using laptops, and two of those three were used exclusively for printing writing assignments. In one classroom, students were using personal phones to access information. There was no use of the student desktops in the five classrooms where they were available.

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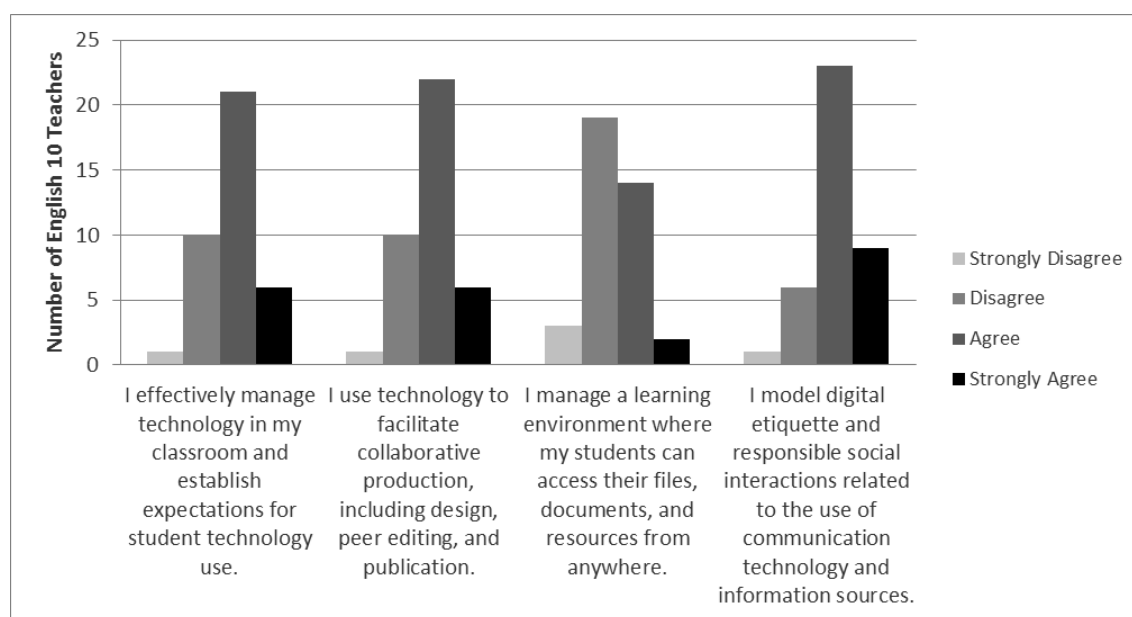
In contrast to the minimal amount of technology that was evidenced in classrooms, (a) 25 teachers self-report on a survey that they are using the technology that is available to them to its greatest potential, (b) 28 report that they are comfortable integrating new technology in the classroom, and (c) 34 report that that design learning activities that use available technology. As shown on figure 4, when planning and preparing lessons in the classroom, 12 teachers report that they are not using digital resources provided by the district digital resources and 16 report they are not using digital resources to differentiate instruction and provide opportunities for students to move ahead and repeat concepts independently. It is evidenced from this data that the digital conversion professional development must demonstrate the full affordances of the existing and new technologies as well as the new digital resources and demonstrate how they can be meaningfully integrated into classroom instruction.



*Figure 4. Planning and Preparation with Technology. This figure illustrates the English 10 teachers' level of agreement around statements related to lesson planning and preparation with technology.*

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When creating a digital learning environment, most teachers agree that they are effectively managing technology in the classroom, however management of devices was a challenge that English 10 teachers noted through the interviews. English 10 teachers report that they are using technology to facilitate collaborative production, peer editing, and publication however this was not evidenced in the walk through observations. Figure 5 demonstrates that most teachers suggest that they are not managing a learning environment where students have access to digital files and resources anywhere.

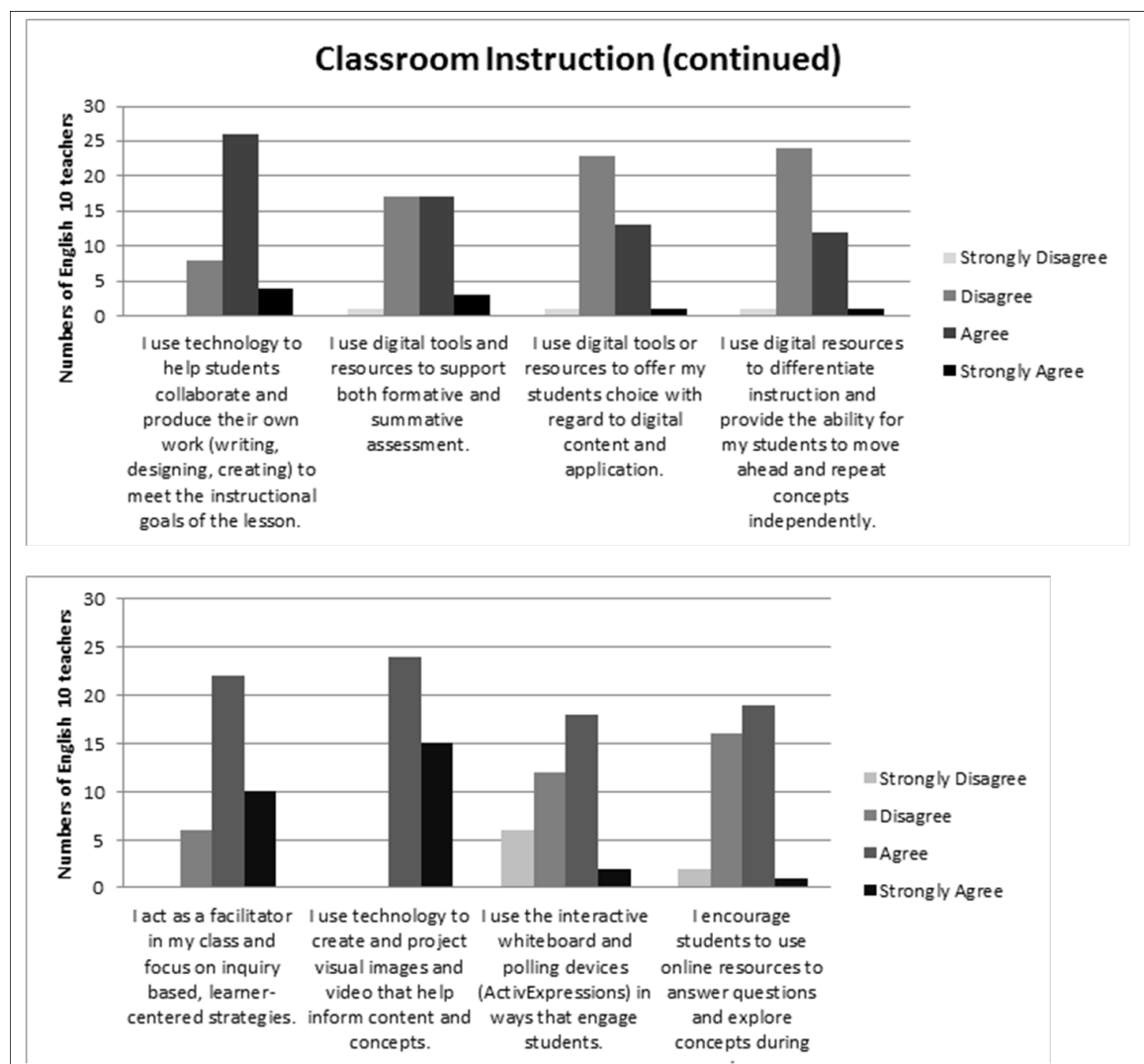


*Figure 5. Creating a Digital Learning Environment. This figure illustrates the English 10 teachers' level of agreement around statements related to creating a digital learning environment.*

When implementing technology in the classroom, most teachers agree or strongly agree that they are (a) facilitating learner centered strategies in the classroom, (b) using technology to project images and video, and (c) using technology for students to collaborate and produce their own work. Many teachers need professional development

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focused on (a) using the interactive whiteboard and polling devices, (b) encouraging students to use online resources to answer questions and explore concepts, and (c) using digital tools to support formative and summative assessment. As shown in Figure 6, most teachers report that they are not using digital tools or resources to offer students choice or using digital resources to differentiate instruction and allow students to move ahead or repeat concepts.



*Figure 6. Classroom Instruction. This figure illustrates the English 10 teachers' level of agreement around statements related to classroom instruction.*

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Throughout the interviews teachers stressed that they needed hands-on relevant content within professional development that integrated the technology into the English 10 content. One teacher said, “I want an interaction of content and technology. I need to see it in play and see it modeled. Sometimes you get the technology piece and a couple of ways you can use it and then you get the content, but I need to see it actually merged” (personal communication, February 9, 2015). Another teacher echoed these sentiments by saying “I would like professional development to be very lesson or content driven based on what the content wants us to teach in our curriculum and how to incorporate the technology. I see that being from an English teacher who has created the lesson and has already piloted them and spent an hour going through it as if we were the student” (personal communication, February 4, 2015). One teacher used the term “real-life application” of the technology in reference to how “it serves kids and our curriculum” (personal communication, February 2, 2015). Teachers also mentioned PARCC assessments, common core, informational text, how to manage and schedule the technology, and the desire to work with applications.

The Assistant Supervisor of English Language Arts summed up the goal of professional development in relationship to digital conversion as she focused her comments on the content of professional development, “Teachers will want to use the technology because it is new and exciting, but will not purposefully use it to connect it to instruction. Just like strategies need to be tied to a purpose in the classroom, will the technology be tied to the purpose. I think it will range from their level of comfort with technology and having the resources available when they need them, schedules for sharing tablets. Did the use of technology enhance the lesson or did it entertain the kids?”

(personal communication, February 2, 2015). The Supervisors of English Language Arts stated, “I’m hoping what we get out of this model for students is a much more self-directed deeper learning of the material that is student driven as well as teacher driven and I don’t think we necessarily have that right now” (personal communication, February 2, 2015).

### **Implications**

The data collected through the needs assessment demonstrated that English 10 teachers recognize the critical role of professional development in implementing a digital conversion throughout the 2015-2016 school year. According to surveyed respondents, ongoing, sustained and relevant professional development for teachers should be focused on topics that integrate the technology, pedagogy, and English 10 content, leading to student-centered learning.

The structure to deliver teacher professional development for the English 10 teacher should include sustained experiences as teachers explore in a risk free environment the challenges and successes related to implementing the first digital conversion project. Some survey respondents revealed that they prefer face-to-face workshops, but many have an interest in exploring alternative formats, including online options to meet the limited time provided for face-to-face professional development. Professional development for the English 10 teacher should also include opportunities for collaboration and networking with other teachers, both for support and for classroom ideas. These conclusions lead to me to investigate possible professional development interventions that address the learning needs of teachers when implementing a digital conversion in English 10. Specifically, I’ll be examining how an online community can

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provide collaborative experiences which can support teachers in solving the ill-structured problems that they will face as they integrate a LMS, new devices, and a new digital curriculum throughout the 2015-2016 school year.



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### Chapter 4: An Online Community of Inquiry to Promote Professional Learning in a Digital Conversion Initiative

Although technology devices are important, it is a strong digital curriculum in conjunction with a comprehensive professional development program that will bring about transformation to each of the 39 English 10 classrooms involved in a digital conversion initiative. The critical importance of the professional development is evidenced by walkthrough data that was collected in each of the classrooms. The Supervisor of English and the Coordinator of Instructional Technology agree that a significant shift is needed in transitioning the classroom environment from a didactic, teacher-centered approach to a learner-centered approach. Although a significant amount of face to face professional development is allocated in the preparation phase of the grant, there is no funding dedicated to the sustained professional development throughout the digital conversion implementation in the 2015-2016 school year.

If framed and designed appropriately, reform-focused professional development literature suggests that an online format could enhance the face-to-face workshop offerings, providing sustained learning and networking opportunities for English 10 teachers to assist them in dealing with the ill-structured problems that will be encountered as they implement a digital conversion. English 10 teachers agree with several research studies that conclude that teachers are looking for professional development that focuses on technology as well as content and pedagogy, providing practical and relevant subject specific strategies (Ching & Hugh, 2014; McGrail, 2007; Eteokleous, 2008, Rienties et al., 2013). Teachers also agree that with studies that indicate that sustained professional development providing collaborative experiences allows for the greatest potential in

impact of professional development in the classroom (Duncan-Howell, 2010; Cifuentes et al., 2011; Hew & Hara, 2007; Hsu & Kuan, 2013; Jung Won & Brush, 2009; Kopcha, 2012; Mueller et al., 2008; Nielsen et al., 2007; Williams, 2013). The goal of this intervention is to structure an inquiry based online professional development community for English 10 teachers to participate in as they construct knowledge to address the challenges and authentic problems that will be encountered while implementing a digital learning environment and reflecting on the application of new knowledge and strategies in their classroom.

### **Intervention**

The Community of Inquiry framework has been specifically chosen for this intervention as it intentionally develops an online learning community with a focus on instructional conversation that goes beyond the social interaction to structure the educational experience to achieve the desired learning outcomes (Garrison & Cleveland-Innes, 2005; Shea & Bidjerano, 2009). The purpose of the Community of Inquiry as described by Vaughan and Garrison (2005) is the “initiation of meaningful learning and the achievement of cognitive outcomes” (p. 2).

The online Community of Inquiry will be structured in the district’s LMS, *itslearning*. Teachers are able to access *itslearning*, the English 10 digital textbook, and other online resources through a single sign on portal through the district’s network or through an organizational account on a non-district computer. To facilitate meaningful learning, a course structure in *itslearning* will be used where teachers are able to (a) share resources; (b) participate in a discussion board through text, audio, or video postings; and (c) easily access their English 10 course that is used with students. Scott (2010) stated

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that in order to be effective, the professional development must (a) take a problem solving orientation, (b) incorporate opportunities for teachers to work together and with experts, (c) provide exposure to innovations in teaching practice, (d) support the application of new strategies in the classroom, (e) facilitate the creation and sharing of resources, and (f) provide reflective opportunity through discussion. In meeting these characteristics, the Community of Inquiry framework will provide the foundation for this intervention, establishing a structure facilitating teacher presence and social presence, with the goal of cognitive presence demonstrated through critical thinking and application to classroom practice.

### **Professional Learning Communities**

As traditional K-12 professional development transitions to an online professional learning community, the online structure, the role of the instructor, authentic learning opportunities, and the social context will influence the ability of teachers to construct learning through experience. The degree of success experienced by the English 10 teacher in this online Community of Inquiry will be evident by his or her ability to successfully apply professional learning to classroom practice. The literature, providing insight into (a) the characteristics of professional learning communities, (b) factors which contribute to participation in a learning community, and (c) the Community of Inquiry model will enable the intervention to facilitate professional learning that is applied in the classroom.

### **Community**

Extensive studies on professional development stress the need for sustained collaboration and networking to improve teacher quality (Boyle et al., 2004; Hargreaves,

2000; Phillips, 2003; Smith & Ingersoll, 2004; Williams, 2013; Wong et al., 2004).

Isolated workshops lend themselves to teachers listening passively to experts concerning topics that do not influence their teaching, do not contribute to sustained professional conversation, and do not allow teachers to observe, discuss, and evolve in order to stimulate teaching practice that promotes student inquiry (Barab, MaKinster, Moore, Cunningham, 2001; Boyle et al., 2004; Grossman, Wineburg, & Woolworth, 2001). Schools, particularly at the high school level, have structural and cultural barriers to creating sustained professional development (Grossman et al., 2001). Hargreaves (2000) encouraged educators to transition professional development from a workshop structure to a collaborative approach, allowing teachers to pool resources and expand their understanding of teaching methods.

These collaborative approaches take the form of professional communities. Hargreaves (2003) claimed, “A strong professional learning community brings together the knowledge, skills, and dispositions of teachers in a school or across schools to promote shared learning and improvement. A strong professional learning community is a social process for turning information into knowledge” (p. 170). Communities allow teachers to collectively and critically reflect on practice, provide risk taking opportunities, and allow teachers to escape the isolation found in the classroom (Wideman, 2010). In these communities, teachers can ask questions to improve teaching, learn from colleagues, facilitators, and professional resources (Wideman, 2010). For a professional community to be established, Grossman et al. (2001) stated that the focus must be on the client, which in a school setting is the students.

Various studies have demonstrated the potential of a community for professional learning (Aghili, Palaniappan, Kamali, Aghabozorgi, & Sardareh, 2014; Barab et al., 2001; Grossman et al., 2001). When exploring a web-based professional community, a commitment to community was found to be critical, allowing members to take ownership, which led to opportunities to share, reflect, and discuss classroom practice (Barab et al., 2001). When exploring the difference between a LMS and a social network in building community, Aghili et al. (2014) concluded that community interactions provide a space for teachers to (a) share, (b) find support, (c) clarify understandings, (d) interrogate one's own practice, and (e) absorb new ideas. After studying a community of 22 English teachers over 19 months in an urban high school, Grossman et al. (2001) argued that community is good for (a) intellectual renewal, (b) a venue for new learning, and (c) a way to facilitate leadership. The teacher's classroom becomes the site for inquiry that feeds into community discussions (Wideman, 2010). Critical to this intervention are the characteristics Conrad (2005) described as she states,

I define community in the online learning environment, as a general sense of connection, belonging, and comfort that develops over time among members of a group who share purpose or commitment to a common goal. The creation of community stimulates for online learners the comforts of home, providing a safe climate, an atmosphere of trust and respect, an invitation for intellectual exchange, and a gathering place for like-minded individuals who are sharing a journey that includes similar activities, purposes and goals (p. 2).

It will be necessary to maximize the affordances of the technology in the instructional design of this intervention to create a safe environment conducive to

learning with an instructor skilled in facilitation. These characteristics will enable the participants to be engaged in an intellectual exchange focused around the learning goal. The technology supports and enhances community in (a) providing synchronous and asynchronous communication tools; (b) providing an interface for sharing artifacts, such as lesson plans, video clips, and student work; (c) facilitating modeling and visualization; (d) providing opportunity for the construction and discovery of knowledge; (e) expanding access to ideas and resources; (f) and facilitating reflection (National Staff Development Council, 2001; Wideman, 2010). In studying what learners perceived as missing from an online community, they stressed the importance of articulating and managing the expectations of the community as one of the most important aspects of building an online community.

### **Participation**

To enhance online communities, instructional design and facilitation strategies should encourage learner participation (Hrastinski, 2009). Learner participation is a critical aspect of building community and must be intentionally addressed in building the online Community of Inquiry to enhance professional development for the English 10 teacher. Hrastinski (2008) suggested that learner participation is a “process of learning by taking part and maintaining relations with others” (p. 1761) and Vonderwell and Zachariah (2005) extend the definition of participation by saying it is, “taking part and joining dialogue for engaged and active learning” (p. 214). A community of “collaborative interactions are an essential element of any pedagogy which assumes that good learning is collaborative and that understanding comes through modeling, participation in, and reaction to the behaviors and thoughts of others” (Pawan, Paulus,

Yalcin, & Chang, 2003, p. 119). Hrastinski (2008) suggests that acknowledging participation as a complex phenomenon makes it difficult to measure. He suggests that participation can range in an online community from (a) the number of times the learner accesses the community, (b) how many words are written, (c) how many quality posts are made, or (d) how often learners are participating in dialogue.

In order to enhance a Community of Inquiry in which the English 10 teachers will participate, instructional design and facilitation must focus on enhancing participation. In a case study to determine the factors that influenced learner participation, it was determined that the interface must afford spatially and visually well-organized discussion that contributes to coherent and meaningful participation (Vonderwell & Zachariah, 2005). This intervention will utilize the recently adopted LMS, *itslearning*, which will facilitate visually well-organized discussion. The designers and facilitators of this intervention must not only learn to build these visually pleasing and organized discussion interfaces, but must monitor the duration of the threads, highlight discussions, and scaffold and support contributions to reduce information overload (Vonderwell & Zachariah, 2005). An additional consideration in this English 10 intervention is that participants who were assigned specific roles within the online environment were found to maintain presence more frequently than those who did not (Vonderwell & Zachariah, 2005).

It is not only the posting that is significant to the learning in an online community, it is also the engagement and reading of the discussion and content that is significant (Morris, Finnegan, & Wu, 2005; Vonderwell & Zachariah, 2005). Lurkers or read-only participants can also learn through online courses (Morris et al., 2005; Vonderwell &

Zachariah, 2005). Using the tools available in *itslearning*, the facilitator of this intervention will want to track students in order to direct them to important content pages, as understanding the layout of the LMS is critical to participation, as well as provide timely feedback. It must also be considered that participation may contribute to a sense of community, but that it does not always engage teachers in deep ways that contribute to challenging one another's thinking, offering perspectives, or collaboratively solving problems around authentic experience (Deng & Yuen, 2011; Kanuka & Anderson, 1998; Yang & Liu, 2004)

### **Community of Inquiry**

The Community of Inquiry framework will provide a structure for the social, technological, and pedagogic processes that facilitate knowledge construction, critical thinking, and reflective practice in community, specifically a community focused on professional learning around curriculum implementation (Garrison & Cleveland-Innes, 2005; Shea & Bidjerano, 2009). Facilitating interaction in order to influence critical thinking and reflective practice is the goal of the intervention, demonstrated through application in the classroom. Garrison (2000) suggested that within a Community of Inquiry, the learning occurs through the interaction of cognitive presence, teaching presence, and social presence. Cognitive presence is defined as “the exploration, construction, resolution, and confirmation of understanding through collaboration and reflection in a Community of Inquiry” (Garrison, 2000, p. 65). The “unifying force that initiates and sustains the inquiry and learning process through design, facilitation and direct instructional responsibilities” is referred to as teaching presence (Vaughan & Garrison, 2005, p. 3). Social presence is the “ability to project one's self and establish



personal and purposeful relationships” (Garrison, 2000, p. 63). Through analyzing discussion postings in online learning communities, indicators have been determined for each presence (Garrison, Anderson, & Archer, 1999). Focusing the instructional design on the indicators of teaching and social presence will maximize the ability of English 10 teachers to grapple with ill-structured problems and achieve cognitive presence, demonstrated through application of professional learning in the classroom.

The Community of Inquiry framework was chosen to structure the intervention as it transitions online learning from a traditional LMS where there is a transmittal of information through sharing lectures and slide presentations to an assumption that social constructivism and collective inquiry are the key elements of an education experience (Aghili et al., 2014; Redmond, 2014; Szeto, 2014). It is important to remember when creating an online community that it is not the online tools, such as the webpages and discussion boards that define community, but the partnerships between people listening to one another and struggling with content (Riel, 1996). When analyzing 500 discussion messages from 16 graduate students, technology affordances in an online environment were found to make communication easy and when participants can communicate easily, they develop a stronger Community of Inquiry (Aghili et al., 2014). The technology affordances were the biggest predictor of teaching presence and the second largest for social and cognitive presence (Aghili et al., 2014). The LMS, *itslearning*, provides many affordances, such as submission of thoughts to the discussion board using multiple means, including recording audio, uploading video, and embedding Web 2.0. Maximizing the affordances in the design of the intervention will create a learning

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environment that allows people to relate to one another and will contribute to constructing knowledge to achieve the learning outcomes (Garrison et al., 1999).

The English 10 Community of Inquiry will be designed, facilitated, and directed based on the purpose, participants, and technological context that *itslearning* provides (Akyol & Garrison, 2008, p. 4). The Community of Inquiry framework, operationalized through the Practical Inquiry Model with aspects from Jonassen's Constructivist Learning Environments Model will be used during the instructional design, development and implementation to facilitate knowledge construction. The learning objectives will be identified rather than emerge as they would in a pure constructivist approach (Karagiorgi & Symeou, 2005). The identification, development, and implementation of instructional activities to support the content and process objectives will guide learners in a "student-centered, student-directed, collaborative, supported with teacher scaffolding and authentic tasks" (p. 19) characteristic of a constructivist environment (Karagiorgi & Symeou, 2005). The online Community of Inquiry will structure the development of the objectives and constructivist strategies as learners struggle with the ill-structured problems that they will face daily in the classroom related to teaching a new digital curriculum and using new technology resources.

The goal for each English 10 teacher, through participation in the online Community of Inquiry, will be to experience social presence and teaching presence resulting in cognitive presence transferred from the community to the application of teachers applying professional learning to transform classrooms into blended, learner-centered, technology rich, learning environments.

### **Teacher Presence**

Teaching presence is the unifying force that initiates and sustains the inquiry and learning process through design, facilitation and direct instructional responsibilities (Vaughan & Garrison, 2005). Significant to the English 10 Community of Inquiry is the attention to teaching presence as it has been found to be a significant factor in influencing cognitive presence as it facilitates social presence for interactions and frames the experience for the student in achieving learning outcomes (Anderson, Liam, Garrison, & Archer, 2001). In a case study of 28 first year engineering students, the teaching presence was found to be more significant than cognitive presence in assisting the participants in meeting the learning outcomes (Szeto, 2014). When the transcripts of two graduate level teaching courses framed by the Community of Inquiry model were analyzed to define teaching presence, it was concluded that the framework can provide education for the course facilitators on the tenets of the teaching presence so that they are able to self-reflect and explicitly enhance teaching presence (Anderson et al., 2001). Of the three elements of teaching presence, design and organization, facilitating discourse, and direct instruction, direct instruction was the predominant category with between 77 percent and 88 percent of all teachers' messages being coded as direction instruction (Anderson et al., 2001).

Online learning participants "expect their facilitator to deliver direct instruction and be a teacher, leader, and mentor first, a referee of interpersonal communications second, and a curriculum designer and maintainer third" (Miller, Hahs-Vaughn, & Zygouris-Coe, 2014, p. 24). When participants responded to a survey after being involved in an online Community of Inquiry, they reported that when instructors demonstrated the teaching presence elements of instructional design and organization and directed

facilitation, high levels of learning and community resulted (Shea, Sau, & Pickett, 2006).

Shea et al. (2006) concluded that a student's sense of trust, collaboration, shared objectives, support, and learning can be predicted from their perception of teaching presence, specifically teachers who are providing direct facilitation.

Significant to the English 10 Community of Inquiry, Miller et al. (2014) sought to determine which characteristics of a facilitator bring about the desired learning outcomes in a Florida Online Reading Professional Development project designed to help teachers improve their practice. Significant to this study was the fact that it is one of the few studies that examines the Community of Inquiry framework in a setting outside of higher education. Consistent with previous conclusions, in self-reflection survey results from 836 participants, greater levels of satisfaction with the course were found when participants felt that the facilitators were providing leadership and direct instruction (Miller et al., 2014). Shea and Bidjerano (2009) concluded that when students see their instructors taking an active role in focusing online discussions on relevant issues, they also report higher cognitive presence.

Despite the goal to move online learning to a student-centered perspective where the instructor is facilitating rather than lecturing, students are looking for a strong teaching presence through direct instruction. Darabi, Arrastia, Nelson, Cornille, and Liang (2011) suggest rather than direct instruction that it is a structured and cohesive, discourse with an instructor who is adept in triggering discussion and facilitating high levels of thinking that will lead toward application in the classroom. This happens in a subtle support framework where the teachers have created an open climate where the group of learners can emerge as they are closely watched, but without interference (De

Laat, Lipponen, & Simmons, 2007). When determining the number of student postings in a forum compared to instructor's postings and the effect of frequent instructor posting, it was discovered that frequent postings by instructors did not lead to more student postings and the discussions were actually shorter when instructors posted more (Mazzolini & Maddison, 2003). Students do respond well to instructors that are perceived as contributing (Mazzolini & Maddison, 2003).

In this intervention, as the content will focus on a digital English curriculum, there will be a co-facilitation team, with an instructional technology expert and an English teacher leader. Miller et al. (2014) stressed the importance of these facilitators having a solid knowledge-base in the field. The instructional design will be carried out with these two teachers who are both serving on the English 10 digital curriculum writing team. It will be necessary to ensure that the facilitators of the experience receive professional development focused on strategies to create teaching presence in an online opportunity, as well as achieve a balance of direct instruction and facilitation.

### **Social Presence**

Social presence, the social connection in a community, serves to facilitate the attainment of the cognitive learning objectives by creating a sense of belonging and an approachable environment where students are willing to ask questions, supporting critical thinking and making the learning enjoyable (Redmond, 2014; Stodel, Thompson, & MacDonald, 2006; Wise, Chang, Duffy, & Valle, 2004). When studying social presence and satisfaction of an online discussion with students in four online graduate classes, strong relationships were found between social presences and perceived learning (Swan & Shih, 2005). The social presence element of comfort was the most significant social

presence element correlated with cognitive presence (Shea & Bidjerano, 2009). Social presence allowed students to express their thoughts more comfortably, especially at the beginning of an online learning experience (Akyol & Garrison, 2008). Akyol and Garrison (2008) suggested that social presence is an important, but perhaps not a significant element in a Community of Inquiry, as it supported satisfaction but had no impact on learning. Wise et al. (2004) agreed with these results when attempting to find a casual effect between social presence and cognitive presence, and found that although social presence increased the amount that students were writing and the perception of the instructor, it had little effect on learning.

Although these studies present conflicting results regarding the impact of social presence on learning, it has been found to impact satisfaction and community building and therefore it is important to the English 10 professional development intervention. To enhance social presence, Stodel et al. (2006) suggested that learners need to know how to learn online and that facilitators must not only teach the content, but should focus on helping learners feel comfortable and confident as they “articulate best practices, be role models in their online interactions, provide examples of strong community building behaviors, remind learners of the important role they have in the discussions, offer constructive feedback, and be present to coach and support learners in their interactions” (p. 18). As online learning is new to the teachers in the district it will be important, as Swan and Shih (2005) suggested, to develop social presence with the English 10 teachers through an introduction or orientation. To nurture social presence in the English 10 online Community of Inquiry, it is also necessary for the facilitator to assist the learner in reflecting on their online comfort level, in setting goals to improve social presence, and to

create a culture that allows the participants to know their online classmates (Shea & Bijerano, 2009; Stodel et al., 2006).

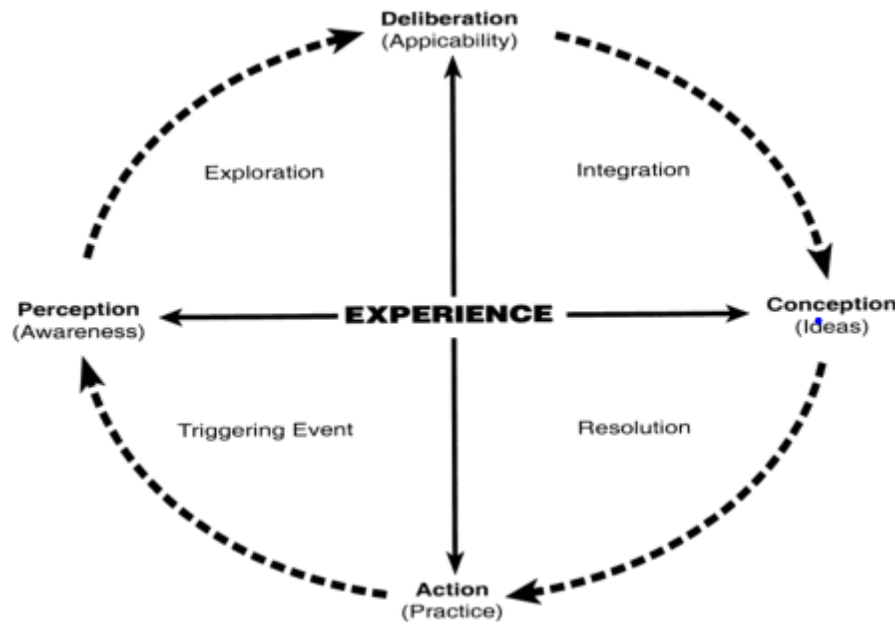
In the development of social presence within the English 10 Community of Inquiry, designers and facilitators must take advantages of the latest technology to move beyond a text-based discussion forum and use audio and video to support communication (Stodel et al., 2006). Stodel et al. (2006) suggested that discussion topics and rubrics that highlight and encourage sharing should be designed to support the development of social presence. Professional development for the facilitators will improve teaching presence, which will influence social presence (Swan & Shih, 2005; Wise et al., 2004).

### **Cognitive Presence**

Cognitive presence, described as the “intellectual climate” (Redmond, 2014, p. 47) and the “focus and success of the learning experience” (Vaughan & Garrison, 2005, p. 8) represents the “analysis, construction, and confirmation of meaning and understanding within a community of learners through sustained discourse and reflection” (Garrison & Anderson, 2003, p. 55). Garrison et al. (1999) suggested that cognitive presence is a recurring process that occurs when learners are constructing meanings and validating understandings as they move through the phases of the Practical Inquiry Model. The development of critical thinking cycles through the four stages of the Practical Inquiry Model include (a) the triggering event, where tasks, questions or stimuli are prominent; (b) an exploration stage where learners seek new information or perspective; (c) an integration stage where analysis and synthesis of various data sources occur to create tentative solutions or justifications; and (d) a resolution stage where new ideas or solutions are defended and applied and tested (Garrison & Anderson, 2003). The

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educational goal and challenge of the English 10 Community of Inquiry is to move the inquiry process through all four phases to ensure a successful outcome (Vaughan & Garrison, 2005).



*Figure 7. Practical Inquiry Model (Garrison, Anderson, & Archer, 1999)*

Vaughan and Garrison (2005) studied each phase of the inquiry process to determine the preference of the learners in a blended environment. They found that in the triggering event stage that participants preferred a face to face environment as they were in a familiar and comfortable environment and relied on communication cues and facial expressions. In contrast, the online environment was found useful in maintaining curiosity and engagement (Vaughan & Garrison, 2005). In the exploration phase, a combination of physical and online spaces allowed for a greater variety of communication and interaction as the participants became aware of various perspectives and resources (Vaughan & Garrison, 2005). Online environments offered the affordance



of communal knowledge management resource web sites that were able to be accessed repeatedly (Vaughan & Garrison, 2005). In both the face to face and online discussions, Vaughan and Garrison found that exploration was the dominant phase of cognitive presence that was coded. This is the stage where purposeful dialogue is crucial so that questions can be asked, ideas can be exchanged, and participants can learn from one another. The benefits of exploration in an online environment included (a) an increased access to the discussion which provided an opportunity for all to contribute, (b) an expanded sense of time, and (c) higher rates of reflection, disagreement, and decision-making concerning application (Vaughan & Garrison, 2005). There was almost no indication of the resolution or application phase in either the face to face or online discussions (Vaughan & Garrison, 2005). Akyol and Garrison (2008) found a similar result in a study that showed a spike in the integration phase which was a result of a discussion board question that required students to explain and discuss topics focusing on major assignments, but found little evidence of resolution.

It is important for the English 10 Community of Inquiry intervention to use *itslearning* in a manner that allows (a) for the communication of cues and expressions, (b) holds resources that can be easily accessed, and (c) provides a structure for purposeful dialogue, as well as a design of activities and facilitation of discussions that move participants to the integration and resolution stages (Akyol & Garrison, 2014; Vaughan & Garrison, 2005). Cognitive presence can be enhanced by designing learning environments that encourage deep approaches to learning through critical discourse (Al-Balushi & Al-Abdali, 2014; Garrison & Cleveland-Innes, 2005). To move participants to the resolution stage, it is also important in the English 10 community to consider how (a) defining clear

expectations, (b) recalling prior knowledge, (c) selecting manageable content, (d) using media, (e) structuring appropriate activities, (f) conducting assessment congruent with learning goals, (g) providing engaging questions, (h) focusing ideas, (i) challenging and testing ideas and techniques, and (j) modeling appropriate contributions can be facilitated in the discussion (Al-Balushi & Al-Abdali, 2014; Garrison & Cleveland-Innes, 2005). It will be critical to the English 10 digital curriculum implementation that the Community of Inquiry is structured to (a) promote reflection on classroom practice, (b) incorporate the design of lesson plans to apply what is learned, and (c) integrate what is taught in the classroom as these aspects have been found to contribute to cognitive presence (Al-Balushi & Al-Abdali, 2014).

**Ill-Structured problems.** Structuring professional development around ill-structured problems has been found to enhance cognitive presence (Bastiaens, & Kirschner, 2007; Choi & Lee, 2009; Darabi et al., 2011; Gašević, Adesope, Joksimović, & Kovanović, 2015; Martens et al., 2007). Too often in professional development, the experience is designed around well-structured problems and then teachers are unprepared to deal with complex problems that require multiple perspectives and diverse solutions (Choi & Lee, 2009). Martens et al. (2007) suggested that presenting learners with these authentic problem solving tasks would intrinsically motivate them. However, when examining the student opinions of the opportunity to explore ill-structured problems in a computer mediated experience, students found that the problems were not authentic and that those that meant to be confusing were not (Martens et al., 2007). The design of the English 10 Community of Inquiry will implement the recommendation in the study conducted by Martens et al. which suggests that understanding the needs of the teachers

for which the professional development opportunity is being designed so that the problems are authentic and relevant.

Several studies have found that structuring learning around ill-structured problems can result in critical thinking (Gunawardena, Ortegado-Layne, Carabajal, Frechette, Lindemann, & Jennings, 2006; Moallem, 2001). Moallem (2001) and Gunawardena et al. (2006) engaged learners in an intervention that was based upon an ill-structured problem and found that presenting a complex problem at the beginning of the course (a) allowed students to discover individual learning needs, (b) facilitated scholarly inquiry, and (c) transformed learning experiences. Central to the design, development and implementation of this intervention is engaging the learning of each module in the Community of Inquiry around an ill-structured problem that reflects the module's content objective. Authentic situations reflecting English 10 digital conversion will be presented. Jonassen (1997) suggested that these authentic problems, situated in everyday practice possess multiple solutions, require the expression of personal opinions or beliefs, and require learners to make judgements and defend the judgements. Jonassen (1999) suggested that the "interesting, appealing, and engaging" (p. 221) problem must be ill-structured and characterized by having multiple solutions and requiring learners to make and defend their judgments. In this intervention, the problem, presented in phase one of the Practical Inquiry Model, the triggering event, will be based on a case or an event that could occur as digital conversion is implemented. Lim (2004) suggested that "cases establish a framework for inquiry and discussion among learners and lead their inquiry process" (p. 628). The case based problem will be clearly articulated through a video presentation of two teachers discussing a dilemma that they encountered in their

classroom, triggering learning reflecting the instructional objective, but also engaging the learner and motivating them to continue to progress through the phases of the Practical Inquiry Model.

The facilitators will encourage the participants to share experiences and tell stories, as the stories allow the teachers to relate to experiences and understand the issues embedded in the problem presented (Jonassen & Hernandez-Serrano, 2002). Facilitating using strategies reflecting teacher presence and facilitating social presence, a discussion board where the learners will share experiences and tell stories using the text, video, audio, and embedded web based tools to initially explore the problem. The sharing of stories will activate prior knowledge allowing the teachers to relate to experiences and understand the issues embedded in the problem presented (Jonassen & Hernandez-Serrano, 2002).

In order for learners to move into the exploration phase of the Practical Inquiry Model and begin to construct knowledge around the ill-structured problem, a list of resources will be provided to the learner, including video, readings, and Internet sites. Jonassen (1997) refers to this step as, supporting knowledge base construction where learners are viewing alternate opinions and perspectives and furthering their knowledge by searching for additional resources. Lim (2004) refers to this stage also as exploration and suggests that “exploring is a systematic way of carrying out an investigation” (p. 633) by considering a variety of resources supported by a facilitator as needed.

**Scaffolds.** When studies were conducted to determine if solving ill-structured problems would assist teachers when dealing with authentic problems in the classroom, it was determined that scaffolds and additional learning supports provided by teachers

would lead learners to critical thinking and application (Choi & Lee, 2009; Darabi et al., 2011; Gašević et al., 2015; Moallem, 2001). Lim (2004) defined scaffolding as “a temporary support provided by a system or an instructor to help students accomplish a complex task” (p. 637) and proposed that scaffolds be carefully designed and implemented to help learners in an inquiry based environment to “move ahead over potential sticking points, and by managing some of the attention-draining details of complex problems” (p. 637). Questioning prompts and sentence openers will be used to intentionally scaffold learning for the English 10 teachers.

As learners move to the integration and resolution phases, scaffolding can guide the students in meeting course objectives and was found to result in the highest levels of cognitive presence (Choi & Lee, 2009; Darabi et al., 2011; Gašević et al., 2015). Phase three of the Practical Inquiry Model, integration, refers to the process of constructing meaning relating the ideas being explored to the identified problem (Garrison et al., 2001). Garrison et al. (2001) stated, “Often students will be more comfortable remaining in a continuous exploration mode; therefore, teaching presence is essential in moving the process to more-advanced stages of critical thinking and cognitive development” (p. 5). The learners in the Community of Practice will participate in a discussion board that prompts the learner to propose a solution to the problem as the facilitators will provide scaffolds such as monitoring interactions, guiding towards resolution, providing examples, asking probing questions, providing additional resources and templates to help English 10 teachers reach this stage of critical thinking (Darabi et al., 2011; Gašević et al., 2015).

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Using a model which places a similar emphasis to the Practical Inquiry Model on resolution and application, Choi and Lee (2009) in their first study found that the 30 students who participated over three weeks in solving problems in an online community could not examine problems from multiple perspectives and lacked critical thinking and solution generation. In the second study, 30 additional students who experienced more explicit guidelines, a revision of questions, and additional guiding questions, were able to consider perspectives, develop arguments, and apply their arguments to the solution of ill-structured problems (Choi & Lee, 2009). In the two cases, Choi and Lee concluded that while studying problems was initially motivating, it was the scaffolds and additional learning resources provided that led to critical thinking and application.

When examining four online instructional strategies to determine which would lead to the high level of cognitive presence, Darabi et al. (2011) concluded by analyzing postings in an online community of 73 participants that the highest percentage of posting segments relevant to the resolution phase occurred in the scaffolded strategy. Higher cognitive presence in the scaffold stage was attributed to facilitators who were highly engaged, monitored interactions, and guided the discussion toward resolution (Darabi et al., 2011). Cognitive presence was also found to be facilitated in an online community when 82 students were assigned the role of research expert and practicing researcher in an online community which included scaffolding opportunities for identifying new questions, sharing information and brainstorming solutions, and testing new solutions (Gašević et al., 2015).

Designers and facilitators in this English 10 Community of Inquiry will utilize question prompts and sentence starters as they have found to be effective scaffolds to

support the knowledge construction in online communities (Ak, 2015, Byun, Lee, & Cerreto, 2014). Ak (2015) discovered that of the 60 preservice teachers who participated in the group of students who used a scaffolding platform that included sentence openers contributed a greater level of cognitive discourse than those who did not, evidenced through significantly fewer group management messages and more group problem solving messages. Byun, Lee, and Cerreto (2014) when studying 205 students in an educational technology course, randomly assigned participants to three groups which included scaffolding questions that were instructor generated, peer-generated, or peer generated with instructor revision, and found that in overall problem-solving performance, the groups that began with guided questions prompts provided from the facilitator outperformed the other groups that generated their own question prompts. In a similar study, Ge and Land (2003) investigated the effects of question prompts and found that students who received questioning prompts were able to (a) identify facts during the problem representation process; (b) organize and plan for the solution, construct arguments and provide justification; and (c) evaluate the solutions. The question prompts suggested in this study, such as “What is the problem to be solved in this task; Why do you think of it as a problem?; What are possible solutions?; What is the reason you choose ... as the best solution?; What are the alternatives if the selected solution does not work well?” will be embedded into the discussion boards and utilized by the facilitators in the English 10 Community of Inquiry to support the learners as they reach cognitive presence (Ge & Land, 2003, p. 238).

Kozan and Richardson (2014) stress that cognitive presence means being “cognitively active” and seeking the most effective and efficient ways of solving a

learning problem with application occurring at the end (p. 68). They suggest that moving through the Practical Inquiry Model is iterative. The design and facilitation of the English 10 Community of Inquiry must be intentionally structured and facilitated with support and scaffolding so that participants are guided through this process as they construct knowledge around ill-structured problems.

### **Proposed Solution**

The Community of Inquiry framework has been specifically chosen for this professional development opportunity as it has as its focal point cognitive presence, which is measured through the Practical Inquiry Model and requires at its highest level, resolution to a problem. Technology has been found to offer affordances in meeting the need for providing authentic communities for teachers to construct knowledge; however various studies have concluded that they do not always result in deep critical thinking (Deng & Yuen, 2011; Huang, 2002; Kanuka & Anderson, 1998; Yang & Liu, 2004). Design and facilitation of the Community of Inquiry should address (a) comfort level found through the facilitation of social presence, (b) the intentional instructional design and direct instruction provided through teacher presence, and (c) the nurturing of the community and participation that is facilitated through both social and teaching presence. When these factors converge, English 10 teachers will have the maximum opportunity to experience cognitive presence through knowledge construction and application of critical thinking to ill-structured problems. Using the technology affordances of the LMS, an environment will be created where the participants will receive scaffolding and support from facilitators so that they feel like they have the necessary resources to construct meaning and translate learning to classroom practice.



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Merrill (2002) suggested that learning will be directly proportional to five principles included within instructional design, including (a) engaging the learner in the solving real-world problems, (b) activating existing knowledge, (c) demonstrating new knowledge, (d) applying new knowledge, and (e) integrating the new knowledge into the learner's world. Framing this intervention and stating learning objectives around the Practical Inquiry Model, as well as integrating features of Jonassen's Constructivist Learning Environments Model will facilitate these principles. Participation in this intervention with a focus on a learner centered instructional design will enable the English 10 teachers to begin the journey to digital conversion, where technology meaningfully enhances learning in the classroom each day.

### Chapter 5: Program Evaluation

English 10 teachers are being asked to make a dramatic shift in instructional practices due to the transition to a digital curriculum and the use of tablet devices in the classroom. An online professional development intervention has been designed based on the Community of Inquiry framework with cognitive presence as its focal point, measured through the Practical Inquiry Model that requires at its highest level, resolution to a problem. Cognitive presence is defined as “the exploration, construction, resolution, and confirmation of understanding through collaboration and reflection in a Community of Inquiry” (Garrison, 2000, p. 65). The purpose of this research study is to investigate the impact of a professional development intervention on the application of professional learning to practice. The following exploratory research questions will guide this study: (a) In what ways does an online Community of Inquiry support the professional learning of teachers as they implement digital practices in the classroom?; and (b) What are the factors in an online Community of Inquiry that contribute to a teacher’s application of professional learning to classroom practice?

#### **Intervention Implementation**

This professional development intervention is implemented as part of a larger digital conversion grant and a professional development plan that began in December 2014 for each English 10 teacher. From December 2014 through August 2015, teachers had the option of participating in seven days of face-to-face professional development to prepare for the full implementation year of the digital conversion. Through these face-to-face sessions, teachers were provided with tablet devices and developed skills to use them, experienced the LMS, *itslearning*, and were introduced to tools that will be used in

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the online Community of Inquiry, such as Office 365 and Web 2.0 tools. This online Community of Inquiry will continue to provide support to the English 10 teachers, and also model how the teacher can structure learning through *itslearning* in the classroom to support student learning.

*Itslearning*, as a web based platform, enables anytime and anywhere access as long as an Internet connection is available on the provided tablets. Teachers will be provided incentives to participate in the online Community of Inquiry, including compensation based on the school district negotiated payment for professional development and also awarded Maryland State Department of Education credit towards certification renewal. Teachers were introduced to the online opportunity through a face-to-face professional development session and also through an email announcement in May 2015.

### **Instructional Sequence**

This 14 week experience will be designed using seven, two week modules that will present an ill-structured authentic problem and guide the learner through the Practical Inquiry Model (Garrison et al., 1999). Each 14 day module will have a specific sequence with the goal of engaging the English 10 teachers in critical thinking. Each problem reflecting a digital conversion topic based on the initial needs assessment study will be introduced with text or video of teachers discussing a classroom experience or relating a story in the first stage of the Practical Inquiry Model, the triggering event, where tasks, questions or stimuli are prominent (Garrison et al., 2001). Teachers will then be guided through (a) an exploration stage where learners seek new information or perspective; (b) an integration stage where analysis and synthesis of various data sources

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occur to create tentative solutions or justifications; and (c) a resolution stage where new ideas or solutions are defended and applied and tested (Garrison et al., 2001). As teachers progress through the Practical Inquiry Model, specific learning objectives will address each phase of the model, as well as the content learned and participation.

### **Participants**

The participant population includes teachers in a Maryland district who are teaching English 10 for the 2015-2016 school year. English 10 teachers are looking for authentic, relevant, and sustained professional development as they implement a digital curriculum and mobile devices and ultimately improve classroom practice. Most of the English 10 teachers suggested that they needed more than 20 hours of professional development for the implementation of digital curriculum and devices, but also share significant concerns about leaving their classrooms covered by substitutes while they receive face-to-face professional development. Offering an online professional development format combined with providing the teachers compensation and credit may contribute to enhancing participation as teacher make this experience a priority over all the other demands for their time.

Through email notification, 39 teachers who teach English 10 in the Maryland district will be presented with the opportunity to participate in an online professional development Community of Inquiry to support the implementation of digital practices within English 10. An email will be distributed through the district's email system, inviting the participants, and providing a full explanation of the procedure, as well as a contact for further information. The teachers will be directed to a web link to indicate participation in the professional development as well as to give consent to participation in

the study. Teachers will be told that they can cease to be involved in the study at any time. This will also be included in the consent form, found in Appendix B. It will be stressed to the teacher that classroom observations are not tied to teacher evaluation but are included exclusively for the research study.

### **Evaluation**

The purpose of this research study is to investigate the impact of professional development structured as an online Community of Inquiry on the application of professional learning to practice. Utilizing a qualitative research method, this study will investigate professional development delivered through an online structure and the factors of this experience that influence the transfer of professional learning to classroom practice.

Berg (2001) suggests that when a study is focused on understanding humans and how they learn, a qualitative approach is most appropriate. In this qualitative study, the focus will be on understanding the relationship of the teacher and professional development. A qualitative approach helps the researcher “identify and explain the way people use or operate in a particular setting; how they come to understand things; account for, take action, and generally manage their day to day life” (Berg, 2001, p. 239). In a qualitative study, although qualitative and quantitative data may be collected, qualitative methods emphasize human behavior and artifacts that demonstrate life and experiences (Schutt, 2012). A focus on meaning rather than the testing of variables, allows the researchers to explore the experiences of participants (Strauss & Corbin, 1998). One benefit of qualitative research is the flexible, fluid, and evolving nature where new pieces of research and data can be added at any time, even late in the analysis as new leads

emerge to learn about people (Charmaz, 2014; Strauss & Corbin, 1998). Exploratory research questions, an orientation to the social context, and the meanings that participants attach to professional development will focus this study (Schutt, 2012).

Bogdan and Bilken (2007) outlined five features of qualitative research. They highlight that qualitative research is naturalistic as the direct source of the data is the natural setting with the researcher spending considerable time in the context of the experience (Bogdan & Bilken, 2007). A second feature of a qualitative methodology is that it uses descriptive data that is found in words or pictures rather than numbers (Bogdan & Bilken, 2007). The written word is critical both in recording and sharing the findings and quotations from the data are often used to illustrate the findings (Bogdan & Bilken, 2007). Fourth, Bogdan and Bilken highlight that qualitative research is concerned with process rather than outcomes. It is also inductive in that it does not search out data or evidence to prove or disprove a hypothesis, but builds a theory (Bogdan & Bilken, 2007). Bogdan and Bilken compare this inductive process to a puzzle in saying that “you are not putting together a puzzle whose picture you already know. You are constructing a picture that takes shape as you collect and examine the parts” (p. 6). Like a funnel that is wide in the beginning, the beginning of the research is open and important questions are developed (Bogdan & Bilken, 2007). Just as a funnel narrows, the theory emerges built on the “abstractions” as the particulars are gathered and grouped together and becomes much more directed and specific (Bogdan & Bilken, 2007). The fifth feature that Bogdan and Bilken highlight is that qualitative research focuses on making meaning though capturing perspectives and accurately determining how people make sense of their lives,

in this case their professional learning, by asking questions from the people as they are interacting professionally.

Prior studies have examined teacher presence, social presence, and cognitive presence in a Community of Inquiry through the lens of self-reflection survey or through discussion board content analysis based on specific indicators and how they interact with one another (Anderson et al., 2001; Redmond, 2014; Szeto, 2014; Stodel et al., 2006; Wise et al., 2004). Other studies examined the number of posts in an online community to determine the phases of the Practical Inquiry Model that were most evident in a discussion board and found little evidence of the resolution phase (Akyol & Garrison, 2014; Vaughan & Garrison, 2005). Limited research exists on the relationship of cognitive presence in the online community to classroom application. A qualitative methodology was chosen so that careful review of data can occur to suggest possible relationships around online professional development and classroom practice, identify concepts, and build a theory (Schutt, 2012).

Hage (1972) defines theory as “a set of well-developed categories (themes, concepts) that are systematically interrelated through statements of relationship to form a theoretical framework that explains some phenomenon” (p. 34). Collecting inductive data, invokes iterative strategies of going back and forth between data and analysis and engaging the researcher in interacting with data and emerging analysis (Charmaz, 2014; Glaser & Strauss, 1967). It is the researcher’s responsibility to be deeply involved with the participants to begin to determine relevant conditions but also to explore how humans respond to conditions and the consequences of the actions (Corbin & Strauss, 1990). Charmaz (2014) suggested that in qualitative study the researcher should, “Seek data,

describe observed events, answer fundamental questions about what is happening, and then develop theoretical categories to understand it” (Charmaz, 2014, p. 44).

This study will employ this qualitative process as the following research questions are considered, with the understanding that through a qualitative methodology, questions may arise throughout the research that direct further data collection and analysis (Strauss & Corbin, 1998):

- In what ways does an online Community of Inquiry support the professional learning of teachers as they implement digital practices in the classroom?
- What are the factors in an online Community of Inquiry that contribute to a teacher’s application of professional learning to classroom practice?

### **Methodology**

Data “refers to the rough materials researchers collect from the world they are studying” forming the basis for analysis (Bogdan & Bilken, 2007, p. 117). Data collection calls the researcher to go where the people study and spend their time and spend time with them there, which in this study will be in an online community, in their schools and specifically in their classrooms (Bogdan & Bilken, 2007). This empirical observation will allow the researcher to think deeply about the participants and the relationship between the online learning and professional development. Through this data collection or field work, the researcher will begin as if they know little about what will be encountered and then build relationships with the participants, gaining trust so that the participant will confide and a detailed record of what is shared can emerge (Bogdan & Bilken, 2007).



“Gathering rich data will give you solid material for building a significant analysis” (Charmaz, 2014, p. 1). This rich data, not easily handled by statistical procedures, includes detailed and focused description of people, places, and conversations revealing feelings, intentions, and actions (Bogdan & Bilken, 2007; Charmaz, 2014). According to Bogdan and Bilken, the best known representations of qualitative research studies utilize participant observation and in depth interviewing. Rich data in this study will be collected through (a) participation reports, (b) field notes from observations of each online module, (c) field notes from classroom observations, and (d) field notes resulting from interview data. After field notes have been written, data will be analyzing by identifying key points with a series of codes, grouping the codes into concepts, and forming categories which is the basis for the creation of theory (Charmaz, 2014; Corbin & Strauss, 1990).

### **Data Collection**

Data collection will take place during the first semester of the 2015-2016 academic school year. The school district’s approval, as well as Institutional Review Board approval, will be gained prior to the collection of any data. Informed consent will be gained prior to any data collection from participants. At this onset of the study, participants and non-participants will be asked to complete a survey, which will indicate their reasons for participation or not participating in the online Community of Inquiry and their beliefs, intentions, and attitudes around their decision to participate. This will provide a foundation for understanding the teachers experience in relationship to professional development.

**Online modules.** Throughout the online Community of Inquiry, in each two-week module, activities and strategies have been designed to lead the participants through the phases of the Practical Inquiry Model. Field notes will be recorded throughout each two-week module as the researcher observes the learner, interactions, and reads through all contributions to the online community. “The instrument of choice for the qualitative researcher is the human observer” (Rudestam & Newton, 2014, p. 109) as “gathering rich ethnographic data means starting by engaging the studied phenomena” (Charmaz, 2014, p. 43). The researcher will be a complete observer and will not influence the learning activities in the online modules (Nørskov & Rask, 2011).

Observing in the online environment will provide a wide perspective in the study as the researcher collects data, reviewing and exploring the data, and making decisions about the future of the study (Bogdan & Bilken, 2007). Throughout these field notes, the researcher (a) examines possible places and people that might be the subject or source for further data, (b) may narrow focus areas for data, (c) decides who to interview, (d) formulates questions, and (e) determines possible topics and themes (Bogdan & Bilken, 2007). This initial observation will serve as a broad exploratory beginning, which will lead to more directed data collection through classroom observation and interviews. Including the online and face to face observations serve as complimentary data collection methods (Nørskov & Rask, 2011).

**Classroom observation.** After establishing a wide perspective through the online community, the researcher will visit classrooms and observe to determine if the data and emerging concepts in the online community are consistent with classroom observation and further define the categories and the relationships among them. Classroom

observation allows for the researcher to directly be involved and determine if teachers are implementing the strategies learned in the online community in the ways that are being described in the community. Classroom observation provides the researcher with (a) a special perspective on the material collected, (b) an in-depth understanding of the participants, and (c) how these participants interpret their worlds (Berg, 2001).

Strauss and Corbin (1998) suggested that when engaging in observations, that it is necessary to let the scene unfold and begin to focus on what is apparent and proves to be significant. The researcher, as a complete, overt observer will conduct the fieldwork, through written notes, captured through a word processing software, looking for examples of transfer from the online community to classroom practice. The researcher will visit English 10 classrooms, capturing video or audio recording if possible, as well as taking brief notes collecting the highlights on what is happening in the classroom. These initial jottings will (a) define the context, scenes, and situations, (b) record individual and collective actions, and (c) record anecdotes. Field notes will be written from the initial jottings and recordings (Schutt, 2012).

**Interviews.** Following classroom observations, the researcher will conduct interviews with teachers previously observed. Interviews will be scheduled and conducted through a face to face meeting. A digital recording device will be used to record all interviews. Intensive interviewing is a qualitative method used to learn about people in depth as they share their experiences, thoughts, and feelings (Schutt, 2012).

The interview should begin with a broad question to engage the teacher in a reflection of the ability of the learning in the online Community of Inquiry to transfer to classroom practice while still allowing the participants to freely express their ideas

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(Rudestam & Newton, 2014; Schutt, 2012). The following broad questions will guide the interviews:

- How has the online professional development impacted your instructional practice?
- Provide specific examples of how your classroom is different as a result of the professional development.
- What would you like to differently that you haven't tried?

The interview will begin by briefly informing the participant of the purpose of the interview, ensuring the confidentiality of the interview, and providing the ability for the participant to shape the content (Bogdan & Bilken, 2007). Bogdan and Bilken stress the importance of approaching the participant as an expert, respecting the ideas and opinions, while making the experience personal and inviting. The researcher's role is to listen, patiently and sensitively, asking for explanations and follow up questions as they attempt to understand the teacher's professional learning in relationship to practice (Schutt, 2012). The researcher should facilitate the conversation in the direction of the teacher's experiences while paying attention to nonverbal cues, expressions, feelings and interests (Charmaz, 2014). Field notes will be written subsequent to the interview as the audio recording misses the "sights, smells, impressions, and extra remarks said before and after the interview" (Bogdan & Bilken, 2007, p. 119).

**Field Notes.** Field notes are "the written account of what the researcher hears, sees, experiences, and thinks in the course of collecting and reflecting on the data in a qualitative study" (Bogdan & Bilken, 2007, p. 119). This is the researcher's log, kept in a word processing software application that helps the researcher track the development of

the research. The field notes will be written throughout each two-week module and on the same day as the observation or interview. The field notes will be formatted with a title and a heading that includes (a) the date and time, (b) the name of the participant, and (c) where the interview or observation took place (Bogdan & Bilken, 2007). Field notes will contain paragraphs that reflect each time a change occurs in the topic of conversation or when a new action occurs to make coding more efficient (Saldaña, 2015).

Field notes should be both descriptive and reflective (Bogdan & Bilken, 2007). The descriptive section of the field notes will capture on paper details of the situation, people, conversation and actions that were observed, including (a) portraits of the subjects, (b) quotes, (c) conversations, (d) gestures, (e) facial expressions, (f) representations of physical settings, and (g) specific retellings of events (Bogdan & Bilken, 2007). The field notes will distinguish the direct quotes, the paraphrased quotes, and the researcher's observations (Schutt, 2012). These pieces of evidence will lead to the reflective portion of the field notes that allow the researcher to identify (a) themes that are emerging, (b) connections between pieces of data, and (c) additional ideas and thoughts (Bogdan & Bilken, 2007).

### **Researcher Stance**

In a qualitative study as the researcher becomes a participant observer, it is important to react and interact as events and situations unfold (Dewalt & Dewalt, 2010). As Coordinator of Instructional Technology, the English 10 teachers know me as a colleague. Due to my non-evaluative role in relationship to the English 10 teachers, they depend on my guidance as they integrate technology into the classroom. It will be important in this study, that I transition from that of a full participant in the online

community and the classroom observations to that of a “participant observer” (DeWalt & DeWalt, 2010, p. 20). Where pure observation seeks to remove the researcher from the actions so that they are unable to influence them and active participation involves engaging in almost everything that the participants are doing, my role of researcher will be that of moderate participation (DeWalt & DeWalt, 2010, p. 20). Moderate participation is described as being “present at the scene of the action, identifiable as a researcher, but does not actively participate or only occasionally interacts with the people in it” (DeWalt & DeWalt, 2010, p. 23). The role of moderate participation allows me to support teachers in my role of Coordinator of Instructional Technology when requested while remaining as the observer in most cases. As Bogdan and Bilken (2007) suggest, I will guard against my own bias by recording detailed field notes that reflect on my own subjectivity. Bernard (2006) summarizes participant observation, connecting it to data collection and analysis by saying,

Participant observation involves immersing yourself in a culture and learning to remove yourself every day from that immersion so you can intellectualize what you’ve seen and heard, put it into perspective, and write about it convincingly.

When it’s done right, participant observation turns fieldworkers into instruments of data collection and data analysis (p. 342).

### **Data Analysis**

Analysis involves the “process of systematically searching and arranging the interview transcripts, field notes, and other materials that you accumulate to enable you to come up with findings (Bogdan & Bilken, 2007, p. 159). Analysis involves working with the data organizing them, breaking them into manageable units, coding them,

synthesizing them and searching for patterns (Bogdan & Bilken, 2007). A key component of qualitative methodology includes the interrelated nature of data collection and analysis, gathering new information while interpreting the data, directing the researcher to the next stage of interviews and observations, as a theory is evolving (Creswell, 2013; Strauss & Corbin, 1998). Analysis includes initial and ongoing interpretations as ideas are developed around the findings, relating the findings to the literature as well and to broader concerns and concepts. Bogdan and Biklen (2007) make recommendations to support ongoing data analysis which include (a) enjoying the freedom of exploration, but narrowing the study early, (b) developing analytic questions that are open ended and focus on meaning, (c) planning data collection in light of previous observation, (d) including observer's comments about ideas that are generated, (e) writing memos, (f) exploring the literature, and (g) trying out ideas and themes on subjects.

Memos written after initial field notes are collected by reading the initial five to six field notes and writing a one or two-page summary of what is emerging (Bogdan & Bilken, 2007). This will happen regularly throughout the study during the writing of field notes and the coding of the data. Memos will serve to (a) capture comparison and connections, (b) crystallize questions and a direction to pursue in subsequent data collection, (c) identify new ideas, (d) deconstruct data to find links between them, and (e) look for patterns (Charmaz, 2014). Saldaña (2015) suggested that anytime anything significant comes to mind about the analysis of the data, the researcher should immediately memo about it.

**Coding.** “Coding means naming segments of data with a label that simultaneously categorizes, summarizes, and accounts for each piece of data” (Charmaz, 2014, p. 111).

Coding, emphasizing what is happening in the experience, begins the process of breaking the data down analytically to create a link between data and the emergent theory (Charmaz, 2014; Corbin and Strauss, 1990).

In the first phase of coding, the researcher will first organize the data and then read it through twice, pre-coding by circling or highlighting significant moments, paying particular attention to observer comments and memos and listing possible coding categories (Bogdan & Bilken, 2007; Saldaña, 2015). The researcher will use the qualitative research software, Dedoose, to first keep a record of emerging codes, a description, and an example providing the opportunity to organize and re-organize the codes (Saldaña, 2015). The researcher will begin to apply the codes to the data, in this initial coding phase, remembering Charmaz (2014) suggestions to (a) remain open, (b) stay close to the data, (c) keep the codes simple and precise, (d) construct short codes, (e) focus on actions, (f) compare data with data, and (g) move quickly through the data. Beginning first, with descriptive and process coding, the field notes will be coded to determine the basic vocabulary of the data and the actions that were emerging through the online community (Saldaña, 2015). Saldaña (2015) referring to this phase as First Cycle coding, suggested that coding and recoding will occur as the codes and categories become refined and abstract. Memo writing continues throughout the coding process to make discoveries

Although not necessarily a linear process, phase two of Charmaz' (2014) coding strategy, referred to as focused coding and calls for the researcher to concentrate on the most useful initial codes and test them against data. Codes that appear more frequently or have more significance summarize or highlight the larger segments of data. The focus



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remains on (a) comparing initial codes with data, (b) examining patterns that initial codes have revealed (c) identifying the codes that best account for the data, and (d) identifying gaps that are revealed as the codes are focused (Charmaz, 2014).

As codes are clustered and reorganized into larger categories and analytic memos are written to discuss how categories interrelate and themes begin to emerge, a foundation is being built for a theory (Saldaña, 2015). Continued deep reflection on the categories and subcategories will allow a theory to develop that captures the lived experience through the teacher's perspective of the impact of online professional development on classroom practice.

### Chapter 6: Findings and Discussions

The purpose of this research study was to investigate the impact of professional development structures as an online Community of Inquiry on the application of professional learning to practice. The following research questions informed this study: (a) In what ways does an online Community of Inquiry support the professional learning of teachers as they implement digital practices in the classroom?; and (b) What are the factors in an online Community of Inquiry that contribute to a teacher's application of professional learning to classroom practice? Through the online community and interviews, the study participants described their experience with the online Community of Inquiry and the implementation of digital practices in their classroom. Observations in the teachers' classrooms also provide information to the application of the digital practice in the classroom. The research findings that this chapter reports are based on these three data sources.

#### **Intervention Implementation**

If framed and designed appropriately, reform-focused professional development literature suggests that an online format could enhance the face-to-face workshop offerings, providing sustained learning and networking opportunities for English 10 teachers to assist them in dealing with the ill-structured problems that will be encountered as they implement a digital conversion (Dash et al., 2012; Desimone et al., 2002; Garet et al., 2001; Jung Won & Bush, 2009; Penuel et al., 2007). English 10 teachers, determined through a needs assessment, that they desired professional development that focuses on technology as well as content and pedagogy, providing practical and relevant subject specific strategies (Ching & Hursh, 2014; McGrail, 2007; Eteokleous, 2008, Rienties et

al., 2013). An intervention was structured as an inquiry based online professional development community for English 10 teachers to collaborate in order to address and reflect on the application necessary to confront the challenges and authentic problems that were faced while implementing a digital learning environment.

This online community was structured around the Community of Inquiry framework (Garrison et al., 2001). Facilitating interaction in order to influence critical thinking and reflective practice is the goal of the intervention, demonstrated through application in the classroom. Rather than following the approach of a traditional LMS transmitting information through sharing lectures and slides, the Community of Inquiry framework was chosen to structure the intervention as it structures learning around social constructivism and collective inquiry (Aghili et al., 2014; Redmond, 2014; Szeto, 2014). The Community of Inquiry framework, operationalized through four stages of the Practical Inquiry Model, was used during the instructional design, development and implementation to facilitate application of professional learning to classroom practice. Instructional activities throughout the four stages of the Practical Inquiry Model supported the content and process objectives and guided learners in a “student-centered, student-directed, collaborative, supported with teacher scaffolding and authentic tasks” (Karagiorgi & Symeou, 2005, p. 19)

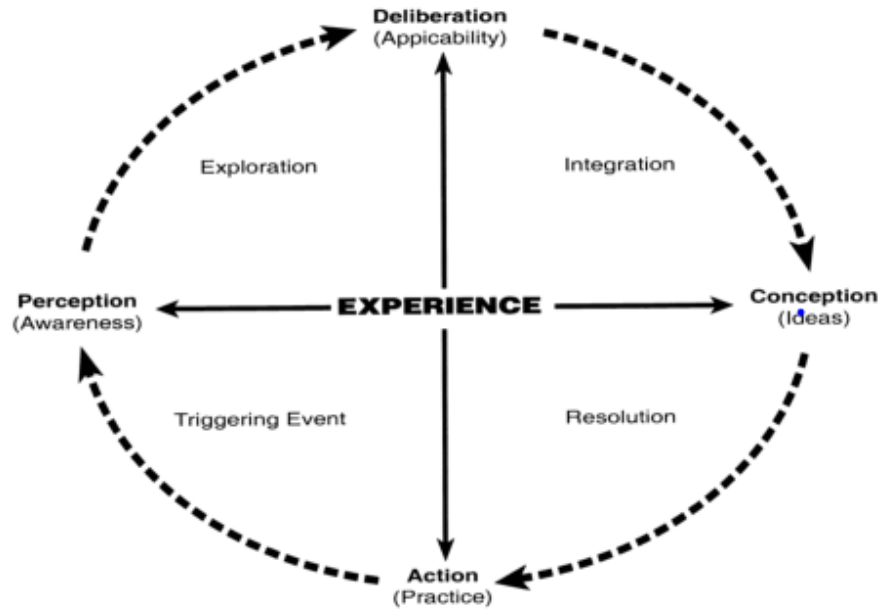


Figure 8. *Practical Inquiry Model* (Garrison, Anderson, & Archer, 1999)

The professional development intervention was facilitated in 14 weeks from September 2015 through January 2016 in seven, two week modules. It was facilitated through the LMS, *itslearning*. Each module moved the learners through the four components of the Practical Inquiry Model including (a) the triggering event, where tasks, questions or stimuli are prominent; (b) an exploration stage where learners seek new information or perspective; (c) an integration stage where analysis and synthesis of various data sources occur to create tentative solutions or justifications; and (d) a resolution stage where new ideas or solutions are defended and applied and tested (Garrison & Anderson, 2003).

## Triggering Event

In each of the seven modules, the triggering event is central to the design, development and implementation of this intervention as it is focused on the learning of each module in the Community of Inquiry around an ill-structured problem that reflects

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the module's content objective. The triggering event in this intervention was facilitated in each module through a three to five-minute video recording of English 10 teachers or English 10 supervisors discussing specific digital learning practices and challenges specific to the topic of the module. Jonassen (1997) suggested that these authentic problems, situated in everyday practice possess multiple solutions, require the expression of personal opinions or beliefs, and require learners to make judgements and defend the judgements. The design of the module then required the participants to share experiences and tell stories, as the stories allow the teachers to relate to experiences and understand the issues embedded in the problem presented (Jonassen & Hernandez-Serrano, 2002). A discussion board or web based tool embedded into the LMS allowed the learners to share experiences and tell stories of their digital practice to explore problems related to the module topic and set specific goals for their individual learning.

### **Exploration**

In order for learners to move into the exploration phase of the Practical Inquiry Model and begin to construct knowledge around the ill-structured problem, a list of resources, including video, readings, and Internet sites, was provided to the learner. Resources included skill based tutorials and documents produced by *itslearning* and Microsoft, *itslearning* pages designed by the district's Instructional Technology Team with tutorials and integration ideas related to web based tools, and web based resources identified from the Instructional Technology Team providing technology integration and blended learning strategies. In this phase, learners viewed alternate opinions and perspectives and furthered their knowledge by searching for additional resources (Jonassen, 1997)

### **Integration**

Phase Three of the Practical Inquiry Model, integration, refers to the process of constructing meaning relating the ideas being explored to the identified problem (Garrison et al., 2001). It is important that the design and facilitation of the course moves the students out of a continuous state of exploration into the more advanced stages of critical thinking (Garrison et al., 2001). Teachers who remain in the exploration stage may continue to explore resources indefinitely but will not integrate the new learning into classroom practice, applying their new learning which is the goal of this intervention. In this stage, the learners in the Community of Inquiry will develop a lesson, technology tool, or digital strategy that will use in their classroom. They will collaboratively build and discuss the integration of resources to their classroom through *itslearning* or through a web based tool embedded into *itslearning*.

### **Resolution**

The Community of Inquiry was structured to (a) promote reflection on classroom practice, (b) incorporate the design of lesson plans to apply what is learned, and (c) integrate what is taught in the classroom as these aspects have been found to contribute to cognitive presence (Al-Balushi & Al-Abdali, 2014). The resolution phase was structured so that participants were required to submit an artifact and reflect on classroom implementation. Ge and Land (2003) investigated the effects of question prompts and found that students who received questioning prompts were able to (a) identify facts during the problem representation process; (b) organize and plan for the solution, construct arguments and provide justification; and (c) evaluate the solutions. The following question prompts assisted the teachers in reflecting on the application “How

did I apply this strategy in the classroom?” “Was the result what I expected?” “Were there any unintended consequences?” “Would I use this strategy or technique again? Why or Why not?”

### **Participation**

In the Spring of 2015, the Supervisor of Reading, English and Language Arts made English 10 teachers aware that they would be offered an opportunity to participate in a professional development community throughout the first semester of the 2015-2016 school year. The Supervisor of Reading, English and Language Arts also provided me time in the in-service meeting of the English 10 teachers in August 2015 where I provided an overview of the experience, discussed compensation and the ability to earn the credit, and answered questions from the teachers. At that time, 33 of the 39 English 10 teachers signed up to participate in the experience through Survey Monkey and provided consent for me to observe and collect data in the online community as well as contact each for subsequent classroom visit and interview.

Of the 33 teachers who initially expressed interest, (a) eight of these teachers have been teaching fewer than five years, (b) seven had been teaching from 5-10 years, (c) seven had been teaching from 10-15 years, (d) six had been teaching from 15-20 years, and (e) five had been teaching from 20-30 years. When choosing reasons for participating, most teachers suggested that they were participating to collaborate and network with other English 10 teachers and to learn about how to integrating tablets into instruction. When asked to share their feelings regarding participating in an online community, the teachers suggested that they were eager to gather ideas from colleagues.

When the experience began on September 15, 2015 nine individuals did not begin the experience. From that point, until the end of October, 14 individuals dropped the experience. Of the 10 that remained, (a) three had fewer than five years of teaching experience, (b) five had five to ten years of experience, (c) one had 15-20 years of experience, and (d) one had 20-30 years of experience. Findings around participation and lack of participation will be discussed throughout this chapter.

### **Findings**

The data collection for this qualitative study came from observations as teachers participated in the online community, invited me to their classrooms to visit, and engaged in interviews. As teachers participated in the community in each two-week module, I captured their online postings and wrote field notes reflecting on the experiences I observed in the online platform. I also collected the email communication from the participants that withdrew. Within the last two modules and throughout the month following the experience, I visited classrooms of those teachers who completed the experience and interviewing the teachers as they reflected on the role of the online community in their practice. I wrote field notes at the conclusion of each visit and transcribed each interview.

While collecting this descriptive data, I began to analyze it to make sense of the perspective of the English 10 teacher making a significant digital transformation and the impact of a professional learning community in that instructional shift. This analysis consisted of coding, or reading through the data and identifying the words or phrases that represented patterns, topics, events, and processes (Bogdan & Bilken, 2007). “A code in qualitative inquiry is most often a word or short phrase that symbolically assigns a



summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data (Saldaña, 2015, p. 3).

Descriptive and process coding methods guided the first cycle coding (Saldaña, 2015). Descriptive coding summarizes in a word or a phrase, most often a noun, the basic topic of the qualitative data (Saldaña, 2015). Saldaña (2015) suggested that descriptive coding method is foundational in determining the basic vocabulary of the data. Process coding is a method that demonstrates, using “ing” words, the action in the data (Saldaña, 2015). Process coding was chosen to supplement descriptive coding as it implies “actions intertwined with the dynamics of time, such as those things that emerge, change, occur in particular sequences, or become strategically implemented” as teachers implemented and reflected on strategies considered through the online community (Hennick, Hutter, & Bailey, 2010, p. 253). Grbich (2012) suggested that coding is a process that permits data to be “segregated, grouped, regrouped and relinked in order to consolidate meaning and explanation” (p. 21).

As I used these two coding methods, codes began to emerge that captured the constraints and the affordances of online professional learning to enhance a digital transformation initiative. I recoded a second time and wrote memos to reflect on the emerging codes. After using process and descriptive coding as my First Cycle coding processes, I used a Second Cycle Method of focused coding to develop categories from the list of First Cycle Codes. The codes were organized into further categories that defined the constraints or affordances of the online professional learning experience. Data that was similarly coded together were reviewed to create category names with an emphasis on process through the use of –ing words.

### **Constraint: Participating Requires Time**

Of the nine teachers who wrote emails withdrawing from the experience, all mentioned that it was time that kept them from participating, making comments such as “too much on my plate,” “underestimated the time” and “work load just barely manageable” (personal communication, September 29, 2015; personal communication, October 8, 2015; personal communication, October 14, 2015). Participating teachers, within the first two modules of the online community, also wrote about the concern of time, both in preparation and time spent in the classroom providing technology instruction. Mary (2015, September 30) states, “Time is a major issue. Frustrating because I see the value and importance in what I am being asked to learn (and it interests me), but the daily obligations of teaching, planning, grading, PDP's, SLO's, observations, and life outside my school building are causing disparity between my reality and my expectations of myself” (para. 2). Five times in the first module, teachers mentioned the time necessary to make the shift to facilitating digital learning environments. Two teachers mentioned the process of engaging students in the digital learning had been “tedious” and one stated that she felt that “students were accomplishing little during class due to technology” (Davis, 2015, September 29, para. 1). Six times teachers mentioned the students and their technology skill level required additional classroom time in making this difficult transition.

When coding the final reflections of the participants who completed the online modules, time continued to be mentioned as a barrier. Mary (2016, January 19) stated “some days it seemed easier to use a PowerPoint that I had previously created” (para. 2) and Elizabeth (2016, January 22) agreed posting “I do find that incorporating technology

can be time consuming” (para. 1). Christina (2016, January 22) summarized the digital transformation that the online experience was supporting by saying “Digital transformation for my classroom means ... major learning curve and a lot of time!” (para.1).

When coding the field notes from observations and visits of the participants who completed the modules, time was a barrier that was shared many times. Each participant brought up time during the interview. Stephanie stated that the learning community is “really helpful when she has time” and discusses the learning affordances of having her students participate in the discussion board that she implemented as a result of participation in the community (personal communication, January 20, 2016). She then emphasizes time again, “It was very useful and helpful, but I had to take time to figure out how to do it and how to set it up” (personal communication, January 20, 2016).

Elizabeth shares similar concerns and shares, “The time to do this is what is the hardest to find.” She goes on to speak about the initiatives that are happening in education and how overwhelmed everyone feels. She mentions again, “There’s so much out there. I want to try it all and I wish this was all I was teaching and I had all day to explore and plan” (personal communication, January 18, 2016). James echoes these concerns and again discusses all the factors of teaching, including grading, student learning objectives, and discusses how professional development falls below all of these concerns due to lack of time (personal communication, January 14, 2016).

Some teachers very clearly stated that they participated in the community due to the incentives of time and money. However, one teacher, when discussing her participation in the community, states that she did appreciate the credit, but the pay and

the credit were not an incentive that she needed. Mary participated in the community because she saw it as a way to force herself to intentionally make time for new learning. She discussed how convenient the online learning was in that it gave her the opportunity to have “a jump start on the knowledge that she needed to use technology in the classroom” (personal communication, January 14, 2016). She said “left to my own devices, I don’t have enough time, I don’t have enough time to research these things and I knew the course would make me” (personal communication, January 14, 2016).

### **Affordance: Goal-Setting and Applying**

Goal setting permeated the conversations in the initial phase of each module, which seemed to establish the foundation for resolution. The two codes, goal. setting and applying, stood out through the coding of the module postings, the field notes of the discussions in the online community, as well as the interview transcripts and field notes from observations. The two codes were reflective of the online community providing supports to address the barriers that can impact teachers integrating technology into the classroom. The structure of the community and the scaffolds for discussion, prompted the learner to establish goals and reflect on application, which gave the teacher an opportunity to have a clear purpose for each module connected to classroom practice. Teachers shared phrases “access the tablets in some way,” “my instructional goal,” “would like to try this again and perhaps utilize a different web tool so that other students can comment and add other examples and analysis to the assignment,” and “utilize the online text and resources in more meaningful ways.” In the interviews, teachers shared comments such as “I want to learn OneNote” and “I want to explore all the blended tools” (personal communication, January 20, 2016; personal communication, January 18,

2016). In the final reflections, the teachers were also establishing goals for their future growth.

Throughout the seven modules, applying was the most frequent code. In the first module, the applications were very simple technology skills, including (a) logging students on to technology applications, (b) developing a course dashboard, (c) merging my courses, (d) designing a page, and (e) using a Padlet. In the final module, the application involved a greater depth of technology application in the classroom.

Discussion posting demonstrating application included comments such as “Students had to maneuver between the lesson on *itslearning*, the Web 2.0 tool they selected to use to create their digital bulletin board, and a few collaborative documents in order to research a social justice activist and their cause, then create and submit a digital bulletin board displaying their research” (Johnson, 2015, January 19, para. 1) and “The students responded in their journals first, then synthesized their quick writes into a post on TodaysMeet. This allowed all students to share their ideas publicly and find common ground with others. I like using this, and Padlet and other related sites, because it allows all students a chance to share their ideas with others, especially the student who is unsure of his or her response” (Smith, 2015, October 26, para. 2).

Requiring an artifact was an additional affordance of the community that seemed to influence application of professional learning to classroom practice. Many teachers suggested that requiring the artifact in the form of evidence from application, was challenging, but an impactful aspect of the community. Stephanie emphasized that the artifact was a motivator and said “I couldn’t say I would do it eventually. I said to myself ok, we are going to do this today and it’s going to work and it did” (personal

communication, January 20, 2016). Mary states, “The online community has definitely helped me. The pacing worked fine. What I was not comfortable with was when you started asking for artifacts. I did this and it helped me learn which made me better able to help the students. I would have never created an *itslearning* page if the course had not required that of me” (personal communication, January 14, 2016). She goes on to say that the task was relatively easy and then each artifact she created followed that initial one and was very valuable for implementation in the classroom. When visiting Mary’s classroom, her students were using the lesson and artifact that she had developed for the final application in the last module. I observed students creating bulletin boards, applying Web 2.0 tools and utilizing *itslearning* pages that had been learned through the online community. Five teachers used the word “forced” in describing that the artifact motivated them to try things that they may have not otherwise tried.

Elizabeth comments in the interview reflecting on a lesson that implemented *itslearning* strategies learned through the community and professional learning for others, “If you truly want to use this stuff in class, you need to participate in the community. I don’t think that I would have done very much at all with it if I wasn’t in the community and adhering to assignments. I’m a good student who completes work on time so it is keeping me on my toes. It has been the reason for me to get back in and apply it to my classroom” (personal communication, January 18, 2016). When visiting Elizabeth’s classroom, she was also using the *itslearning* page that she created as the artifact for Module Four. What I saw in the classroom mirrored her written description in the community, “In this lesson, students were able to read and compare informational text, use a database to locate information, reflect upon their findings as a class using Padlet,

and synthesize information through a discussion board” (Miller, 2016, November 20, para. 1). When visiting James’s classroom, his students were involved in a lesson that he had created and shared as the artifact for module five focused on integrating the digital text and *itslearning*. Stephanie shares that even though it is hard to find time to participate in the community, “It turns out to be helpful. It’s forcing me to try things which we need” (personal communication, January 20, 2016).

### **Affordance: Sharing and Collaborating**

From the first module, it was obvious that teachers wanted to share and valued the ideas and perspectives that their colleagues brought to the community. This was also an affordance to the community that enabled teachers to overcome the barriers to technology integration and integrate professional learning into the classroom. A significant amount of sharing took place during the first state phase of the module after teachers had been prompted through a video regarding the focus of the session. Teachers activated prior knowledge by sharing out their current practices and established a goal for the module. Ideas began to flow, as seen through posts such as “At the start of the compassion unit, I asked students to use the tablets to find stories of real compassion. They then shared these stories on Padlet in the form of a 6 word story with a picture and link to the website. I got this idea from the 6 word memoirs in the introduction lesson” (Jackson, 2015, October 31, para. 1). Many participants make use of the features of the LMS to share materials with their colleagues. James and Elizabeth specifically mention saving lesson resources to the library so that others may access them.

Teachers began to move beyond strictly sharing to collaborating together as they posed questions to their colleagues and dialoged around additional lesson ideas. One

student discusses a lesson and shares a problem she is having with a student posting off task posts and states in response to another teacher's post "Like you, I'd be interested to hear what is working for others with regard to this" (Johnson, 2015, October 26, para. 2). Christina (2015, September 30) indicated her interest in seeing a lesson transformed with technology by saying "I would love for you to share your lesson on "The Lottery" because I just taught that story but without the technology, so it would be fantastic to see how you embedded the technology with the lesson" (para. 1).

Throughout the written reflections on the community and interviews with teachers, the value of sharing continues to be emphasized. One teacher reflects, "The community has assisted me by giving me encouragement and new, great ideas for teaching lessons. That has been the biggest help in this whole transformation. I will continue to reach out to the people in this community for help and ideas because they are a great resource" (Jones, 2016, January 22, para. 2). Elizabeth (2016, January 22) mentions, "I have felt very supported and have received really great ideas from my colleagues" (para. 3).

### **Affordance: Identifying the Impact of Technology**

The code, impact of technology, refers to participants reflecting on lesson ideas by identifying benefits that a specific technology brought to a lesson or learning experience occurred often in the descriptive coding. Beginning in the first module, and evidenced through the discussion in each module in the experience, it seemed that providing the teachers with an opportunity to address the benefits that the technology brought to student learning acted as a factor in confront the barriers of integrating the new learning around technology into instruction. Stephanie (2015, October 14) shares the



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impact of implementing a discussion board by saying, “The students responded in a much more elaborate manner than I expected. When I completed this activity last year, on paper, student responses were much shorter. The open format gives students the freedom to elaborate” (para. 1). Alyssa (2015, October 26) shares the benefits of using web tools in providing student voice, “I now use web tools like Padlet when students will be predicting or sharing their opinions because it enables the students who are usually quiet to participate in productive ways” (para. 1). Mary (2015, October 26) agrees that web based tools provide a voice for students in saying “I completely agree that one of the huge benefits to tools like these is their ability to offer a voice to those students who, in the past, have chosen to quietly fly under the radar. I love "hearing" the voice of these students, and I have found that their comfort with and ability to safely express their opinions in writing is leading to increased confidence in expressing their ideas/opinions verbally (para. 2).

David (2015, October 27) shares the benefit of student going deeper with their learning as a result of using web tools, “The other results of using this were unexpected in a positive way. Students revisited the Padlet the next class, and used it as a way to generate further ideas for their own theme statements. Students were very interested to see what others were thinking in regards to the theme statements and the Padlet allowed for them to compare their own ideas to their peers. This allowed them to go further with their own thinking and explore their ideas on compassion on a deeper level than before” (para. 2). Thomas (2015, October 31) echoes this idea in stating that web based tools, “helped students move beyond clichéd ideas of compassion and into a deeper

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understanding, which later translated into a deeper understanding of the compassion inherent in the texts we read through the unit” (para. 1).

Teachers also recognize that technology enables students to take ownership of their learning. David (2015, October 29) states, “One of the things that I hope students take away from the technology this year is an ability to locate effective resources on their own. I have also seen in my own classroom that when you have them explore the resources themselves, they often take ownership of the material, and are more willing to teach their peers how to do these tasks.” Another teacher states, “By allowing them to post and respond to one another, I believe they came up with better responses. It is especially helpful for students who can sometimes be a bit lazy at times to see the amount of effort that classmates put into their work. It challenges them to step up their responses!”

In discussing a challenging class and engagement, Elizabeth shared that she “didn’t want to admit it, but technology is making a difference with this class. I struggled with classroom management with this class until I put the tablets in front of the students” (personal communication, January 18, 2016). Mary mentioned that in a large class of over 30 students she was struggling with management. Mary reflected after I had visited her classroom that once the initial technology problems were addressed and students were working on their projects, students were highly engaged using one of two technology tools to represent a biography that included multimedia (personal communication, January 14, 2016).

### **Discussion**

Charmaz (2014) suggested that coding is the critical link between data collection and the explanation of meaning. As a result of the coding, three themes emerged that addresses the two questions that framed this research:

- In what ways does an online Community of Inquiry support the professional learning of teachers as they implement digital practices in the classroom?
- What are the factors in an online Community of Inquiry that contribute to a teacher's application of professional learning to classroom practice?

**Theme 1: Teachers who overcome the barrier of time to participate in professional development are either motivated by incentives or an intrinsic belief in the benefits of technology integration to student learning. Without participation in professional learning, application is limited.**

In order for professional development to support teachers as they implement digital practices in the classroom, participation in professional development is critical. It is suggested that online professional development has the potential to fit a teacher's schedule and provide ongoing, job-embedded support (Dede et al., 2009). Mary, one of the ten teachers who completed the experience states that the online community helped her solve the problem of time to explore and reinforces that online learning is a structure that she prefers, "I know that everyone is different, but online is so convenient. I've always been a person to want time to think about it and the online environment gives you time to think" (personal communication, January 14, 2016). However, throughout the experience, participation waned with the primary reason cited as time. Teachers who completed the experience suggested that finding time to complete the experience was challenging. Ertmer (1999) suggested that time is a first order barrier to technology

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integration. First order barriers are those which are described as being extrinsic to teachers that impede meaningful classroom use of technology and include such things as access to computers, insufficient time to plan instruction, inadequate technical support, and a lack of pedagogical support (Ertmer, 1999).

Time, as a first order barrier to technology integration, appears throughout the literature. As early as 1993, teachers were identifying time as a barrier to technology integration noting that there is not enough time for teachers to prepare computer-based instruction (Hadley & Sheingold, 1993). Gorder (2009), in a study to determine how well teachers integrated technology in the four years following a professional development experience, discussed the factors that hindered integration. Lack of time was indicated as the main barrier to integrating technology in the classroom (Gorder, 2008). Teachers shared that they needed extra planning time to integrate technology into lessons, and had insufficient time to learn as well as insufficient time for students to be at computers (Gorder, 2008). In two studies, specifically examining secondary teachers' integration of technology, concluded that teachers have insufficient time to address course content and technology and have inadequate preparation time to implement new technology (Cuban et al., 2001; Kirkscey, 2012). Non users of technology questioned where the time would come from and users made it clear that using computers made their job harder (Cuban et al., 2001). Cuban et al. (2001) concluded that "The issue of inadequate time in the daily schedule to plan work together goes to the heart of teacher use of new technologies and their preferred teaching practices" (p. 828).

In this study, it appears that English 10 teachers are experiencing the barrier of time not only as a barrier to infusing the technology into the classroom, but also as a

barrier to participation in the professional learning experiences. "Teachers need opportunities for ongoing dialogue about their experiences and for continuous development of their abilities to imagine and discover more powerful learning experiences for their students" (Sandholtz, Ringstaff & Dwyer, 1997, p. 51). However, many teachers are frustrated with professional development because it requires large investments of time that is unavailable (Dede, Breit, Ketelhut, McCloskey, & Whitehouse, 2005).

Both those who participated in the online community and those who dropped out of the experience expressed that time was a factor involved in participation. Many teachers initially wanted to participate, and even with a credit and compensation offered, only ten completed the experience. The ten individuals who completed the experience made common expressions during interviews regarding their belief in technology enhancing instruction. When asked why she participated in the community, Mary states "I have a great interest in technology and I see that that's what draws the students in" She goes on to say "I see a need for technology considering the type of world these kids are going to move into" (personal communication, January 14, 2016). James said, "We have to acknowledge that technology is a part of their lives and I think that this might be the biggest shift in education in 100 years and to be on the ground floor in this massive shift in thinking is pretty exciting to me" (personal communication, January 14, 2016). Elizabeth states that even though she teaches a Strategic Reading English 10 course that "these kids deserve the chance to delve into *itslearning* as well" (personal communication, January 18, 2016). Many studies suggest that teachers' attitudes towards technology is the strongest predictor of integration in the classroom (Capo & Orellana

2011; Howley, Wood, & Hough, 2011; Miranda & Russell, 2012; Pittman & Gaines, 2015). In this study, it seemed to be a significant predictor in participation in the online professional development community as well.

Participation in the professional development is a significant facet when examining the factors that contribute to a teacher's application of professional learning to classroom practice. Participation defined as a "process of learning by taking part and maintaining relations with others" is necessary for the outcome of the intervention to be realized (Hrastinski, 2008, p. 1761). If application is to occur, participants must first engage and respond to the activities and strategies designed to lead them through the phases of the Practical Inquiry Model. Although time was found to be a significant barrier, some teachers were motivated to engage and work through the phases of each module.

Participation seemed to be influenced by both incentives, compensation and credit, as well as teacher belief in the impact that technology can have on student achievement. The teachers who completed the experience were asked to reflect on this theme through a member checking exercise conducted through Survey Monkey. Participants reflected that both the incentives and beliefs were motivating factors. One teacher states, "Although I agree that incentives are always nice, I believe it is trumped by the intrinsic belief that teachers will seek and participate in PD that has true value to their own professional growth and will see this growth as an extension in their classroom" (survey response, April, 08, 2015). Another teacher disagrees and suggests that compensation is a significant motivator. "And while I wish it wasn't the case, being able to pay people - teachers - for their time is definitely a major part of the motivation.

Teachers are stretched so thin and are so underpaid right now that it's very difficult to commit to important PD” (survey response, April 10, 2015).

**Theme 2: When online web based tools are embedded into an LMS, the collaborative capabilities of the LMS are extended, facilitating not only the sharing of practices, strategies and ideas, but collaborative and reflective thinking.**

It is through modeling, reflection and collaboration that both first order barriers, those that are external to the teacher, such as time, and second order barriers, those that are internal such as their own beliefs about technology integration can be addressed (Ertmer, 1999). Teachers reflected that collective participation of groups of teachers discussing teaching practice on a regular basis is critical for active learning to occur in supporting change in practice. (Desimone et al., 2002; Garet et al., 2001; Penuel et al., 2007; Williams, 2013). According to Hew and Hara (2007), teachers sharing knowledge with one another to improve practice is at the core of professional development. English 10 teachers began to immediately share, question, and collaborate around the application of technology tools in the classroom. Just as English 10 teachers expressed that they were looking for ideas and strategies and suggested that sharing was one of the reasons for participation, teachers have been found to participate in online communities for the ideas provided, subject specific resources, support for classroom problems and reflection from teachers on what they have found effective (Jung Won & Brush, 2009).

Teachers moved beyond sharing in this community to thinking and learning collaboratively where they demonstrated that they were engaging with new ideas, raising questions, and clarifying misunderstandings (Garrison, 2015). Garrison (2015) goes on to say that “Thinking collaboratively is personal reflection fused with critical discourse

where ideas can be challenged” (p. 125). It is not enough to only acquire information or have an emotionally satisfying experience, thinking collaboratively involves the learner in collaborative engagement in order to test meaning and build understanding (Garrison, 2015). Collaborative thinking is demonstrated in a discussion that was held on a Padlet around a discussion on applying Office 365 to the classroom as teachers shared the Office 365 tools that they were using and had a discussion regarding OneNote and whether OneNote would be an appropriate tool to add to *itslearning* in their current implementation. They collaboratively shared resources, agreed, clarified by asking questions and sharing varying perspectives, solved problems, and established future goals.

In an online community, technology facilitates a connection that is sustained, allowing time for reflection prior to response. Garrison (2015) reflects that “our thoughts are shaped through the connections with others – increasingly through communication technologies” (p. 132). Online tools have the potential to facilitate the connection of teachers, as the Internet provides teachers with opportunities to collaborate with other teachers and experts outside their school in interactive spaces as well as providing the opportunity to access knowledge and resources (Duncan-Howell, 2010; Nielsen et al., 2007; Phillips, 2003). Garrison, (2015) stresses that it is important to consider how people are connected and that open and free communication seems to facilitate collaborative thinking.

Although the literature around the Community of Inquiry most often reflects on the facilitation of cognitive presence through a discussion board, the inclusion of embeddable web based tools within the LMS allowed for active participation in sharing



experiences and opinions as well as interacting with one another around lesson ideas and the implementation of strategies in ways that weren't apparent in the discussion board. What began as sharing transitioned in many cases to collaborative thinking in this first phase of each module of the online community. The quick and efficient web based or Web 2.0 tools, such as Padlet, Today's Meet, and collaborative Word documents, embedded into the LMS in the Triggering Phase, seemed to facilitate the collaborative thinking as teachers explored new topics, shared their previous experience, and questioned one another.

The necessity of including web based tools demonstrates McLoughlin and Lee's (2007) assertion that current generations of learning management systems may not accommodate the social connectivity tools that transition learning to a student centered environment. It is the emergence of Web 2.0 technology that provides an opportunity for students to participate more actively in online activities and provides an opportunity for students to exchange experiences or opinions (Chen, Hwang, & Wang, 2012). Various studies suggest that web based tools, such as wikis, blogs and podcasts, twitter, and Facebook, provide the collaborative, authentic, learner centered features that are not found in an LMS and are offered as an alternative to an LMS (Aghili et al., 2014; Ebner, 2007; Hodges & Repman, 2011).

In this study, rather than using web tools as an alternative to LMS, the web based tools were embedded onto the LMS page for each module extending the collaborative features of the LMS. This allowed for all the material in an online community to be visually grouped on a single page with contiguous placement of all learning elements which has been found to make it easier for students to find the materials and

communicate (Rubin, Fernandes, & Avgerinou, 2013) Through the member checking experience, when reflecting on this theme, the participants in this study reflected on the affordances of the web tools in contrast to the “typical generic discussion board” and agreed that these web tools provided a more creative opportunity to collaborate with peers and allowed for immediate and clear feedback which facilitate the collaborative thinking (survey response, April 10, 2016). The web based tools allowed for easier communication than a discussion board as all communication was contiguous, allowing the participants to see all responses and to easily build connections, quickly ask and answer questions, share ideas, and think collaboratively around classroom implementation of digital strategies.

**Theme 3: Structuring the online community around an authentic problem and scaffolding discussions to require goal setting, evidence of application, and reflection on the impact of classroom application contributes to the transfer of professional learning to classroom practice.**

Professional development when linked to the curriculum and focused on instructional strategy has been found to be more effective and more likely to influence a teacher’s practice which led to building each module in the community around an authentic problem (Garet et al., 2001, Penuel et al., 2007). Following the presentation of the authentic problem, the community was structured to move learners through all phases of the inquiry process and reach resolution as Garrison (2011, 2015) suggested is necessary if resolution is expected.

Several studies have found that structuring learning around ill-structured problems applicable to classroom practice can result in critical thinking (Gunawardena, et

al., 2006; Moallem, 2001). Jonassen (1997) suggested that these authentic problems, situated in everyday practice possess multiple solutions, require the expression of personal opinions or beliefs, and require learners to make judgements and defend the judgements. In this study through the triggering event of each module, the teachers were presented with an ill-structured problem through a video conversation of English 10 teachers that focused on an area of implementation of the English 10 digital transformation. The use of multimedia of the participants' actual colleagues provided an immediate connection for the teachers. Mary stated, "I definitely started with the videos. I always wanted to listen to the video. You want to feel like you are not alone and see what other people are feeling and what problems they are having" (personal communication, January 14, 2016). Each video was followed with the opportunity to allow English 10 teachers to dialogue in a web based tool embedded into the LMS to connect the problem to their own practice, activate prior knowledge, and set goals. The goal setting allowed the learners to maintain a focus throughout the module and choose resources to support their implementation.

Each module was established to take the learner from the goal setting stage, to exploration where resources were available to support their learning and to assist the teacher in moving into integration where they created a technology tool or strategy that could be applied in the classroom. The goal that was established focused the learner on the required artifact that would be shared on the discussion board accompanied by a reflective post in the resolution stage. Garrison (2015) states that project assignments are excellent activities that have a clear outcome and collaboratively engage learners throughout the inquiry process. This study reinforced this assertion, as teachers both

reflected on the importance of the artifact in discussion posts as well as suggested ways in which they used the artifacts to impact classroom practice. Not only did the written reflections provide evidence of classroom application, but the artifacts that were shared in the community were evidenced during classroom visits.

For example, in Module Two, after the video discussion of teachers' initial use of *itslearning* and sharing of the problems they were confronting, the teachers were prompted to discuss their initial use of five features of *itslearning* and to establish a goal. When reflecting on the five *itslearning* features including discussion, pages, survey, conference, and test, Elizabeth shared that she had learned through summer professional development how to develop a page, but for this module she wanted to "learn more about, explore, and implement" a discussion thread. She references the video prompt, by referencing that she will have to find the discussion posts to grade as the teacher in the video also shared was a challenge (Miller, 2015, October 4, para. 1). She continues by pointing out that the instructional goal of using a discussion in the classroom is to meet the weakness of live conversation which is described as the inability of students to "really listen to and absorb the ideas of others before sharing a new idea" (Miller, 2015, October 4, para. 2). She states, "I am hoping using this feature on *itslearning* will allow students to really read, consider, and respond to the ideas of their peers." Elizabeth moves to the exploration phase where she investigates tutorials on setting up and using the discussion board, returning to her original post and providing an update on her progress and explaining that prior to using the discussion board and asking assistance to solve another problem that she encountered. Three days later she returns to discuss her implementation, ask questions such as "Has anyone else experienced this issue?" and discuss her

implementation while providing screen shots of the discussion board where the students had responded to a novel on the discussion board.

Elizabeth's example demonstrates the intentional structure of the community that led to application. After application, teachers were prompted to share and reflect. Typically, according to Gusky (2002), application of professional learning in the classroom results when an initial change that teachers made in their classroom practice is implemented and then evidence of improvement is seen in the learning outcomes of their students. Gusky (2002) presents a model of teacher change that suggests that significant change in teachers' attitudes and beliefs occur after teachers have gained evidence of improvement in student learning motivating the teacher to implement future professional learning. In this study, it seemed that the teachers not only benefited in belief and attitude by reflecting on the impact that technology had on student learning in their own classrooms, but were equally motivated through the sharing and reflection of their colleagues. Jessica (2015, November 18) stated on the discussion board "I am encouraged seeing so many success stories on there. I am re-motivated to try the online text" (para. 9). Stephanie (2015, October 14) reflects on her own practice by saying "I am extremely pleased with the way that our class discussion turned out. I must admit, I was a bit hesitant, but I am quickly becoming a strong believer in the discussion tool" (para. 1). Karen reflects, "I would like to try Today's Meet and Test-Mind-Map next. I do feel compelled to confess that the new technology is coming to me in the fantastic lessons that have been uploaded to *itslearning*. Not in a million years do I believe I could sample all of this technology without support" (para. 1). The discussion prompts included scaffolds through the use of reflective prompts and sentence starters that facilitated the focus on the

improvement of student learning. Questions such as “How did I apply this strategy in the classroom?” and “Was the result what I expected?” as well as “Why would I use this strategy again?” facilitated the final reflection in one module. Also sentence starters were provided to participants in order to facilitate suggestions for responding to prompts. For example, following the question, “How can the digital text enhance student learning?” possible sentence starters such as “I didn’t realize the digital text could enhance learning by ...” and “I used the digital text in my classroom and ...” prompted discussion that focused on student learning.

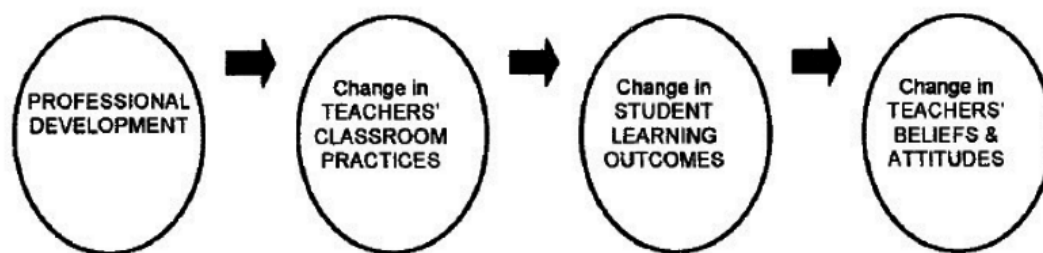
### **Conclusion**

Teachers who are being asked to make dramatic shifts in instructional practices due to a digital transformation of curriculum and access to digital tools must have ongoing, structured reflective collaborative opportunities to reflect on classroom practice and the implementation of new digital strategies. When an intentional structure is used, an online community has the potential to meet the professional learning needs of teachers experiencing this shift. The online community can facilitate collaborative and reflective thinking around ideas and strategies that can be applied to classroom practice and motivate teachers to apply and reflect upon these practices. When online structures provide an opportunity for the teachers to reflect on the manner in which professional learning can impact student learning, it has been found to impact teacher beliefs and attitudes in positive ways overcoming the beliefs and attitudes that can be a barrier to technology implementation (Ertmer, 1999; Guskey, 2002).

The affordances resulting in participation in an online community are dependent upon specific factors or strategies used in the instructional design of the online

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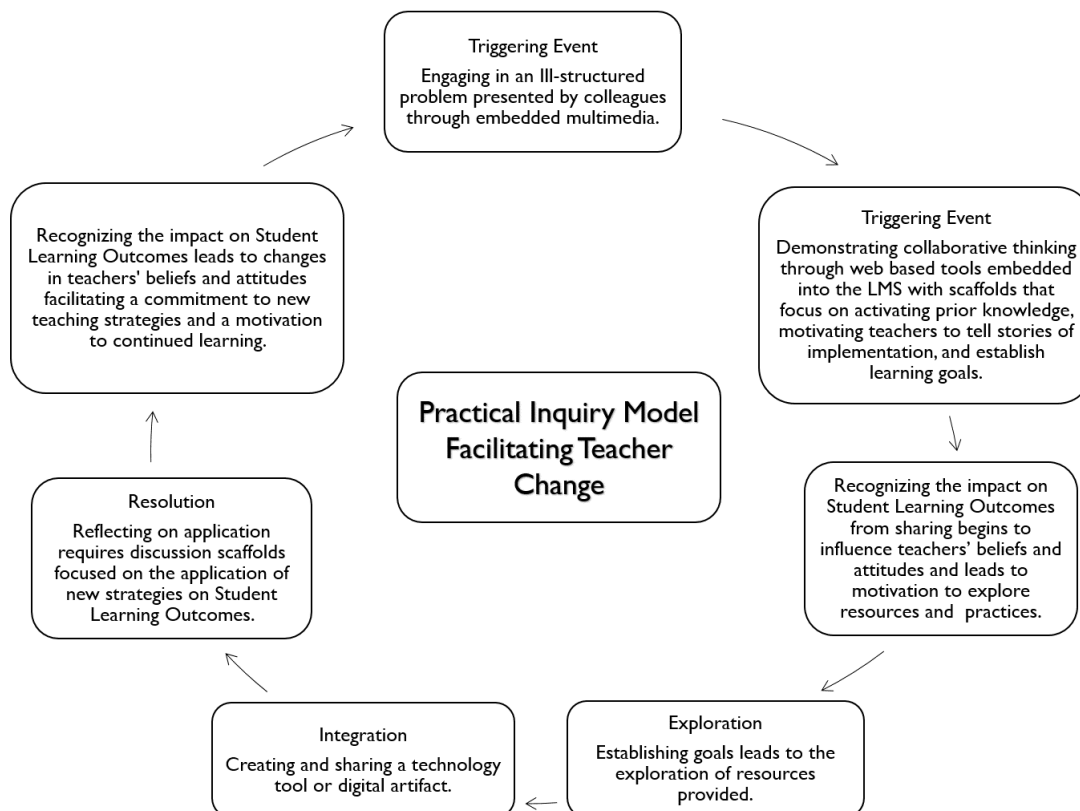
community. The findings of this study suggest that combining the Practical Inquiry Model and Guskey's Model of Teacher Change (Figure 9), will provide an intentional structure to facilitate these affordances. Guskey's linear Model of Teacher Change is combined with the cyclical nature of the Practical Inquiry Model will not only lead the participants to classroom application, but facilitate the reflection necessary to recognize the impact of the application on student learning.



*Figure 9. Guskey's (2002) Model of Teacher Change*

Figure 10 demonstrates this model. The model begins with the triggering event that presents and engages the participants, through embedded multimedia in the online module, with an ill-structured problem relevant to classroom implementation of digital strategies. Questions and sentence starters engage the learners through web based tools to activate prior knowledge, motivate the teacher to tell stories of implementation, and facilitate the establishment of a goal for the module. This first stage of collaboration has the potential to motivate teachers to move into the exploration stage as they reflect on potential learning as well as the strategies that their colleagues have found impactful to student learning. Teachers continue to move through the Practical Inquiry Model as they engage in exploration, create digital instructional tools through the integration of new material, and apply the new tools and strategies to classroom instruction. Intentional

scaffolds prompt the teacher to reflect on the application, focused on the impact on student learning objectives.



*Figure 10. Practical Inquiry Model Facilitating Change*

When teachers recognize the positive impact that new strategies have had on student learning outcomes, they are more likely to experience changes in their beliefs and attitudes (Ertmer, 1999; Guskey, 2002). This study indicates that this may result in an integration of these new strategies into practice as well as the teacher experiencing motivation to participate in another cycle of inquiry. Throughout the triggering event and the resolution phases, this study suggests that discussion scaffolds and efficient technology tools can facilitate the ease of communication and direct the teachers toward



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collaborative thinking and reflection so that they may recognize the benefits that technology brings to student learning. This change may not only result from personal reflection of practices learned in the community, but reflecting and thinking collaboratively with colleagues who are sharing the positive impact of new strategies on student learning. An instructional design that focuses the learner on application combined with reflecting on the positive impact technology can have on instruction through the personal implementation of practices learned in the community further enhanced by the sharing and collaboration around colleague implementation, has the potential to create a lasting change in teacher practice when implementing digital strategies and tools.

In this study, these affordances were realized by teachers who were willing to overcome the barrier of time and participate in professional development outside of the duty day. Online structures cannot solve the problem of limited time for professional development. Professional development in the Maryland district reflects a workshop format delivered (a) on professional development days, (b) through coverage provided by a substitute on a duty day, or (c) through a voluntary summer or after school professional development. Although professional development is recognized as critically important in transforming classrooms, the struggle remains to engage all teachers in professional development that will enhance learning in ways that are job-embedded, efficient, and timely. Through the implementation of the first digital transformation, the Maryland district may be experiencing, “New expectations for student learning are clashing with old conceptions of teaching and outmoded approaches and structures for teacher learning” (McRobbie, 2000, p. 3). Although online structures for professional learning

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can assist in providing job-embedded professional learning and contribute to sustaining professional learning over time, it does not solve the barrier of time.

When considering the implementation of future content area digital transformation, this Maryland district will want to consider Knapp's (2003) suggestion to districts about taking "seriously the call for a richer array of professional learning opportunities" which may require the "rearrangement of the basic schedule of the day, month, and year to build professional development time blocks into the normal flow of work life" (p. 130). When policies that support high-quality professional development initiatives remove the time constraints that teachers experience, an online professional development structure has the potential of facilitating collaborative thinking, application of new strategies, and reflection on student learning. This potential is dependent on the structure of the online community utilizing technology tools that enhance the collaborative capabilities of the LMS as well as framing the community around authentic problems and scaffolding discussions to require goal setting, evidence of application, and reflection on the impact of classroom application.

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### Appendix A

#### Survey Assessing the Professional Development Needs of English 10 Teachers

##### **Survey for English 10 Teachers**

Variables are provided in parentheses prefacing each question:

(Demographics) 1. What is the highest level of education you have achieved?

- Bachelor's Degree
- Master's Degree
- Doctorate
- 

(Demographics) 2. How long have you been in the education profession?

- Fewer than 5 years
- 5-10 years
- 10-15 years
- 15-20 years
- 20-30 years
- 30-40 years
- More than 41 years
- 

(Demographics) 3. What is your age range?

- Under 25
- 25-34
- 35-44
- 45-54
- 55-64
- 65 or over

(PD Structure: Duration) 4. How many hours of professional development would you find ideal in the planning stages of digital conversion (January 2015-June 2015) to support the upcoming implementation of English digital curriculum and digital learning environments?

- None
- Less than 10 hours
- Between 10-20 hours
- Between 20-30 hours
- Between 30-40 hours
- More than 40 hours



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(PD Structure: Format) 5. What professional development structures would you find ideal in the planning stages of digital conversion (January 2015-June 2015) to support the upcoming implementation of English digital curriculum and digital learning environments?

- Summer Face to Face Workshops
- Afterschool Face to Face Workshops
- Face to Face Workshops During the School Day
- Face to Face Opportunities to Share Practices
- Continuing Professional Development Courses
- Online Workshops
- Online Professional Learning Community for Sharing of Practices
- Online Study Group
- Face to Face Workshops Supported By an Online Community

(PD Structure: Format) 6. Indicate the importance of the following professional development characteristics in supporting the planning stages of digital conversion.

- Receiving Direct Instruction
- Hands-On
- Networking with Colleagues
- Facilitating Opportunities to Ask Questions
- Demonstrating Lessons that Integrate Technology
- Reflecting on Practices
- Strategies that Can Be Used Immediately
- Anticipating and Solving Problems

(PD Structure: Collaboration) 7. How important is it to you to have opportunities to collaborate with other English teachers during the planning phase of digital conversion?  
Not Important, Somewhat Important, Very Important, Essential

- Other teachers at my school.
- Other teachers in the district.

(PD Structure: Duration) 8. How many hours of professional development would you find ideal in the implementation phase of digital conversion (August 2015-June 2016)?

- None
- Less than 10 hours
- Between 10-20 hours
- Between 20-30 hours
- Between 30-40 hours
- More than 40 hours

(PD Structure: Format) 9. What professional development structures would you find ideal in the implementation phase of digital conversion (August 2015-June 2016)?

- Summer Face to Face Workshops
- Afterschool Face to Face Workshops

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- Face to Face Workshops During the School Day
- Face to Face Opportunities to Share Practices
- Continuing Professional Development Courses
- Online Workshops
- Online Professional Learning Community for Sharing of Practices
- Online Study Group
- Face to Face Workshops Supported By an Online Community

(PD Structure: Format) 10. Indicate the importance of the following professional development characteristics in supporting the implementation phase of digital conversion (August 2015-June 2016).

- Receiving Direct Instruction
- Hands-On
- Networking with Colleagues
- Facilitating Opportunities to Ask Questions
- Demonstrating Lessons that Integrate Technology
- Reflecting on Practices
- Strategies that Can Be Used Immediately
- Anticipating and Solving Problems

(PD Structure: Collaboration) 11. How important is it to you to have opportunities to collaborate with other English teachers during the implementation phase of digital conversion (August 2015-June 2016)??

Not Important, Somewhat Important, Very Important, Essential

- Other teachers at my school.
- Other teachers in the district.

(PD Content) 12. Indicate your agreement with each statement as you reflect on the following statements in regard to lesson planning and preparation.

Strongly Disagree; Disagree; Agree; Strongly Agree

- I use the technology that is available to me to its greatest potential.
- I comfortably integrate new technology in my classroom.
- I use digital resources provided by the district, including online productivity tools, content management systems, online reference sources, and video-streaming sites.
- I design learning activities that use available technology, including laptops, tablets, computer labs, and interactive whiteboards
- I use digital resources to differentiate instruction and provide the ability for my students to move ahead and repeat concepts independently.

(PD Content) 13. Indicate your agreement with each statement as you reflect on the following statements in regard to creating a digital learning environment.

Strongly Disagree; Disagree; Agree; Strongly Agree

- I effectively manage technology in my classroom and establish expectations for student technology use.

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- I use technology to facilitate collaborative production, including design, peer editing, and publication
- I manage a learning environment where my students can access their files, documents, and resources from anywhere.
- I model digital etiquette and responsible social interactions related to the use of communication technology and information sources.

(PD Content) 14: Indicate your agreement with each statement as you reflect on the following statements in regard to classroom instruction.

Strongly Disagree; Disagree; Agree; Strongly Agree

- I act as a facilitator in my class and focus on inquiry based, learner-centered strategies.
- I use technology to create and project visual images and video that help inform content and concepts.
- I use the interactive whiteboard and polling devices (ActivExpressions) in ways that engage students.
- I encourage students to use online resources to answer questions and explore concepts during class.
- I use technology to help students collaborate and produce their own work (writing, designing, creating) to meet the instructional goals of the lesson.
- I use digital tools and resources to support both formative and summative assessment.
- I use digital tools or resources to offer my students choice with regard to digital content and application.
- I use digital resources to differentiate instruction and provide the ability for my students to move ahead and repeat concepts independently.

(PD Content) 15: Indicate your agreement with each statement as you reflect on the following statements in regard to professional practice.

Strongly Disagree; Disagree; Agree; Strongly Agree

- I frequently collaborate with my coworkers to share relevant digital tools, resources, or content.
- I use collaborative online tools to communicate and work with colleagues.
- I engage in discussion with my coworkers about the ways that technology can improve student learning.
- I use an online grading system portal to inform students and parents of upcoming assignments, projects, and assessments well ahead of the date due.
- I keep students and parents informed using online communication tools such as e-mail, blogs, and social networks on a regular basis.

(PD Content) 16. What are your specific goals around the implementation of digital curriculum? How can professional development help you meet these goals?

Open Ended

Appendix B

Informed Consent Form

Johns Hopkins University  
Homewood Institutional Review Board (HIRB)

<b>Informed Consent Form</b>	
<b>Title:</b>	An Online Community of Inquiry to Promote Professional Learning in a Digital Conversion Initiative
<b>Principal Investigator:</b>	Carolyn Parker, Assistant Professor, Johns Hopkins University
<b>Date:</b>	June 25, 2015

**PURPOSE OF RESEARCH STUDY:**

The purpose of this research study is to investigate the impact of professional development structured as an online Community of Inquiry on teacher learning and classroom practice. Creating digital learning environments will require professional development that provides the structure, content, duration, and collaboration that influences teacher practice and transform classrooms. Several research studies conclude that teachers are looking for sustained professional development experiences which involves a significant number of hours, allowing for teachers to engage deeply in learning technology skills and providing the time for the technology to be learned in relationship to content and pedagogy, providing practical and relevant subject specific strategies (Ching, 2014; Desimone, Smith, & Phillips, 2013; Garet, Porter, Desimone, Birman, & Yoon, 2001; McGrail, 2007; Eteokleous, 2007). Researchers have begun to examine the role of a Community of Inquiry situated in an online community in supporting professional learning and impacting classroom instruction (Al-Balushi & Al-Abdali, 2014; Garrison & Cleveland-Innes, 2005). This research will examine the impact of an online Community of Inquiry in supporting the professional learning of Harford County Public School's English 10 teachers as they create classroom digital learning environments.

We anticipate that approximately 40 people will participate in this study.

**PROCEDURES:**

1. The English 10 teachers will consent to participation in the research study through a Survey Monkey survey where they will be prompted with the consent form and will provide consent electronically through a yes/no.
2. If teachers indicate consent, they will be directed electronically to participate in a

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Survey Monkey survey regarding their participation and goals.

3. As teachers participate in the online Community of Inquiry, the online community will be observed, observations collected through field notes, and field notes analyzed to determine if critical thinking and application is occurring.

4. As a follow up to the analysis of the online community, the researcher may contact teachers by email to request a classroom visit and subsequent interview. Teachers will indicate consent by signing a consent form. The interview will last approximately 15 minutes at a time and location of the teacher's choice. With the teacher's permission, video, audio and notes will be collected during the classroom visits and the interviews will be audio-recorded.

5. Field notes will be written to capture the teachers' perspective on the ability of the online Community of Inquiry to influence classroom practice.

If the teacher does not want to continue with the classroom visit or the interview, it may be stopped at any point at the request of the teacher.

### **RISKS/DISCOMFORTS:**

The risks associated with participation in this study are no greater than those encountered in daily life.

### **BENEFITS:**

There are no direct benefits to you from participating in this study. However, the information gained from this research may help education professionals better understand the role of online structures supporting professional development.

### **VOLUNTARY PARTICIPATION AND RIGHT TO WITHDRAW:**

Your participation in this study is entirely voluntary: You choose whether to participate. If you decide not to participate, there are no penalties, and you will not lose any benefits to which you would otherwise be entitled.

If you choose to participate in the study, you can stop your participation at any time, without any penalty or loss of benefits. If you want to withdraw from the study, please contact Martha Barwick, Coordinator of Instructional Technology ([martha.barwick@hcps.org](mailto:martha.barwick@hcps.org)).

If we learn any new information during the study that could affect whether you want to continue participating, we will discuss this information with you.

### **ALTERNATIVES TO PARTICIPATION:**

If you choose not to participate, you may still complete the professional development experience for compensation and credit, but your online posts will not be coded, nor will you be asked to participate in surveys, class visits, or interviews.

### **CONFIDENTIALITY:**

Any study records that identify you will be kept confidential to the extent possible by law. The records from your participation may be reviewed by people responsible for making sure that research is done properly, including members of the Johns Hopkins University Homewood Institutional Review Board and officials from government

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agencies such as the National Institutes of Health and the Office for Human Research Protections. (All of these people are required to keep your identity confidential.) Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

All data collected for this study will be de-identified by substituting a participant number for the person's name prior to analysis.

### **COMPENSATION:**

There is no compensation associated with participation in the study.

### **IF YOU HAVE QUESTIONS OR CONCERNS:**

You can ask questions about this research study now or at any time during the study, by talking to the researcher(s) working with you or by calling Martha Barwick at 410.809.6127 or via email at [martha.barwick@hcps.org](mailto:martha.barwick@hcps.org).

If you have questions about your rights as a research participant or feel that you have not been treated fairly, please call the Homewood Institutional Review Board at Johns Hopkins University at (410) 516-6580.

### **SIGNATURES**

#### **WHAT YOUR SIGNATURE MEANS:**

Your signature below means that you understand the information in this consent form. Your signature also means that you agree to participate in the study.

By signing this consent form, you have not waived any legal rights you otherwise would have as a participant in a research study.

\_\_\_\_\_  
\_\_\_\_\_

**Participant's Signature**

**Date**

\_\_\_\_\_  
\_\_\_\_\_

**Signature of Person Obtaining Consent**

**Date**

**(Investigator or HIRB Approved Designee)**

### Curriculum Vitae

Martha E. Barwick was born in Baltimore, Maryland on July 21, 1972. She attended Eastern Nazarene College from 1990 to 1994 and graduated with a Bachelor of Science degree in Elementary Education. While teaching fifth grade in Harford County Public Schools, she attended Western Maryland College from 1997 to 1999 and graduated in 1999 with a Master of Science in Education. She continued at Western Maryland College through 2008 to obtain certification in School Library Media. While serving as an Instructional Technology Teacher Specialist with Harford County Public Schools, Martha completed a certification in Administration and Supervisions with an endorsement from The International Society of Technology in Education from 2008-2009. While serving as Coordinator of Instructional Technology with Harford County Public Schools, Martha pursued her Doctor of Education with a specialization in Online Teaching and Learning, defending her dissertation in May 2016.